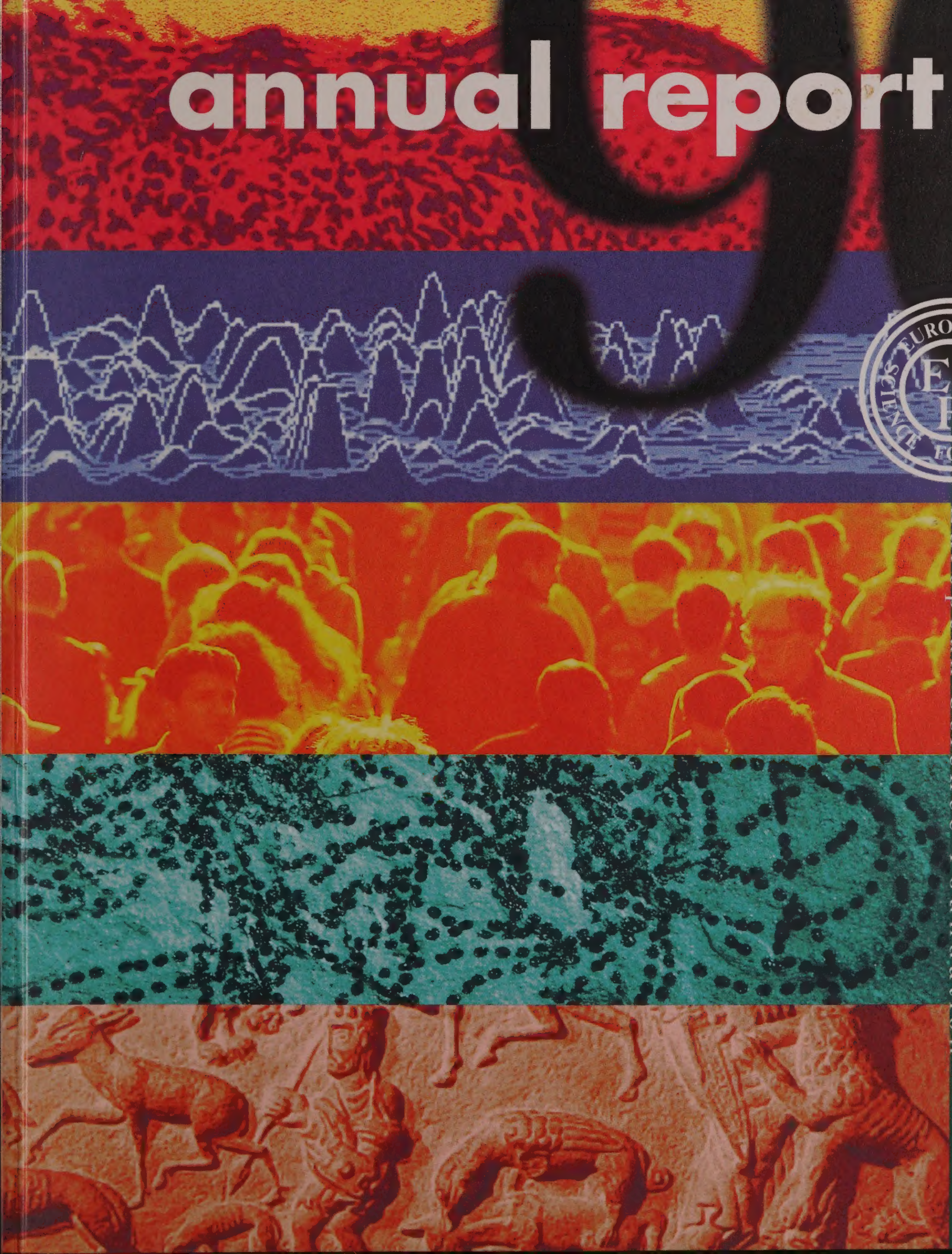
annual report

9



European Science Foundation

WELLCOME
LIBRARY
Ann rep
Q28
.EA1
E89
1996

The European Science Foundation (ESF) acts as a catalyst for the development of science by bringing together leading scientists and funding agencies to debate, plan and implement pan-European scientific and science policy initiatives.

The ESF is an association of 62 major national funding agencies devoted to basic scientific research in 21countries.
It represents all scientific disciplines: physical and engineering sciences, life and environmental sciences, medical sciences, humanities and social sciences. The Foundation assists its Member Organisations in two main ways: by bringing scientists together in its scientific programmes, networks and European research conferences, to work on topics of common concern; and through the joint study of issues of strategic importance in European science policy.

It maintains close relations with other scientific institutions within and outside Europe. By its activities, the ESF adds value by cooperation and coordination across national frontiers and endeavours, offers expert scientific advice on strategic issues, and provides the European forum for fundamental science.

22501878082

Contents

President's commentary 2

Secretary General's review 4

Scientific insights 11

Medical sciences 14

Life and environmental sciences 20

Physical and engineering sciences 25

Humanities 30

Social sciences 35

Operational activities 41

How the ESF works 42

Committee and board reports 43

Scientific programmes 48

Scientific networks 60

European research conferences (EURESCO) 66

Publications 68

Organisational structure 70

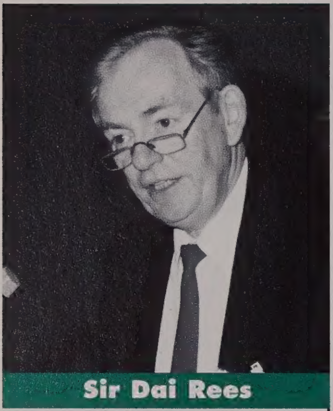
Board, executive council and committee membership 71

Associated board and committee membership 74

Member organisations 76

Finance and accounts 78

President's commentary



Sir Dai Rees

Science and the buzz words of business

Annual income twenty pounds, annual expenditure nineteen nineteen six, result happiness. Annual income twenty pounds, annual expenditure twenty pounds ought and six, result misery.

Mr Micawber in "David Copperfield" by Charles Dickens *

The common interests of ESF Member Organisations have always been in sharing the results and excitements of research, collaborating in its furtherance, and exercising good practice in its funding. The boost that ESF gave to European science during its first two decades owed much to an emphasis on excellence guaranteed by honest, expert, and properly conducted peer review. Establishing standards in this way was, however, a principle so self evidently right that it needed little discussion for its own sake. How times change! Policies for science funding have now become a discussion topic important in its own right, sometimes quite separate from scientific goals themselves. Perhaps it is time to think again about where this has led us and where we go next.

Why *should* we take a serious interest in science policy and science politics? Why not just take the money and get on with the science? A moment's thought shows we have no alternative. We are in Micawber's dilemma because governments don't see with sufficient clarity the relationships between the science to be done and the policies they wish to implement. They never will unless we make the case to convince them. Increasingly funds come with strings attached which might compromise standards of excellence and peer review. This calls for even more explaining of how some strings for short-term gain can lead to sacrifice of long-term advantage. As it says in the New Testament, Caesar must be given his due but so must God.

First the 1993 strategic reappraisal then the 1996 ESF position paper *Beyond Framework Programme IV* placed science policy firmly on the ESF agenda. The issue has been developed further in the *New Perspectives for Science in Europe* series of ESF symposia. New insights into science policy have been debated in excellent presentations and panel discussions at the General Assembly. Now we must ask whether preoccupation with science policy is taking our eye away from the science itself. ESF's good standing was built on promoting science for intellectual benefits that have stood the test of time. A generation of scientists will testify that ESF gave them European horizons. Unless we rediscover this early momentum we fail both our founders and successors. I am heartened and delighted to see that the Standing Committees have exciting plans to develop their science agendas. I hope that ESF will agree a forthcoming Forward Plan to show the way ahead in scientific activities.

Beyond the ESF, the bigger question is how the European scientific community can respond to the challenges it is now facing. If the boat is leaking and we are drifting off course, we don't have the choice between baling out the water and checking our navigation. We must do both. There is also the threat of sudden storms and tempests. In science politics, these are increasingly precipitated by the buzz words and sound bites of those to whom the recipes for quicker returns are obvious. Examples include: 'get efficiency from market exposure', 'cut bureaucracy', 'flatten management structures to drive down costs', 'establish performance indicators', 'measure against milestones', 'concentrate on priorities', 'focus on delivery', 'use and conform to technology foresight'. The harassment of some national research councils in this way seems so severe that their attention could be drawn inwards, and away from international collaboration for better science. The management formulae are believed to have succeeded in public transport, services and utilities, retail distribution and trading, manufacturing industries and elsewhere - so why not science? Even when these policies have improved efficiency in some areas outside science, however, they have usually contributed to social and economic problems through rising unemployment. They might well be the best answers available in some areas for the moment, but cannot be complete and final remedies in all of them for the long term. Even if they can bring benefits to some areas of science, they need, like any medicine, to be administered in the right dose, in the right way and after thorough diagnosis - a process often too lengthy for current political timescales. We scientists must urgently engage in the dialogue to find better ways.

An example that cries out for constructive and thoughtful input by scientists is in relationships between the academic community and industry. Building this bridge is considered by a growing number of policy makers as so obviously the answer to Europe's problems that any foolishness can be justified in its name. We may smile when it is said that motherhood and apple pie are such self-evident national treasures that no American can speak against them. Even mothers can however be neglectful or worse, badly made apple pies lack appeal, and some schemes for forcing the two communities together do no good for industry while harming academic science. Of course, it is in the common interest of science and industry, as well as European well being, that we work together, but we must do so effectively rather than for window dressing. Scientists of Europe cannot complain if we continue to fail to come forward with practical demonstrations of how to meet challenges like this, while strengthening rather than weakening the science for Europe's future.

Sir Dai Rees, *President, ESF*

---

* A word of explanation might be helpful to readers from Continental Europe puzzled by the numbers given in this quotation. The passage is well loved in the UK not only for the poignancy and truth of its message but also because it evokes sentimental memories of the good old days before the decimalisation of our currency, when there were twenty shillings to the pound and twelve pence to the shilling.

Secretary General's review

Peter Fricker

Professor Peter Fricker, the ESF's Secretary General, looks back on a year of consolidation and progress.

● How would you sum up the last year?

Overall it's been a good year, a period of consolidation and development that has strengthened the ESF's voice in European science and helped provide a firmer basis for our activities. The key to all this was the implementation of the recommendations of the ESF's 1993 strategic reappraisal which began to bear fruit in 1996. The aim of these recommendations, which were based on extensive consultations with our Member Organisations, was to forge a new role for the ESF that took into account the changing economic and political climate in Europe, especially the increasing funding restrictions faced by basic research. As a result, the ESF has adopted a more systematic role as a catalyst and coordinator for pan-European scientific initiatives, including policy-related issues.

Several developments during the year demonstrated how effective this new approach can be. Our involvement in submitting recommendations for the next Framework Programme is an important case in point. We also strengthened the ESF's hand as a 'clearing house' for large scale facilities, such as neutron scattering facilities, and continued to support a wide range of scientific research programmes, networks and conferences, producing some interesting new results as the following pages in this annual report illustrate. We still have a lot of work to do but, in general, we are on the right road. The ESF is developing into a more systematic, transparent and a more widely recognised ally for our Member Organisations.

● How important was the ESF's involvement in the debate about the EC's next Framework Programme?

The Foundation was able to bring together the views of a wide cross-section of the scientific community to create a pan-European consensus on the future direction that basic research ought to take. Drawing on our increasingly strong relationships with our Member Organisations, we were able to put together a scientific agenda for the Fifth Framework Programme (FP5) and ensure that our Members' views were heard by the EC in a coherent, well-argued manner. This type of concerted approach is essential today. If basic science is to progress, we have to work together and speak with one voice. Developing the FP5 agenda was a painstaking and complex exercise but it appears to have succeeded. There is now growing recognition in the EC that basic research across all scientific disciplines is vital for the EU to achieve its principal goals, in particular, greater economic competitiveness in Europe and a higher quality of life for its citizens. This message was expressed strongly in the ESF's position paper, *Beyond Framework Programme IV.* As the only multidisciplinary body representing the humanities, the ESF also underlined in this paper the essential role that the humanities have to play in understanding the complexities of European integration.

● What were the main recommendations of the ESF's FP5 position paper?

It's important to recognise that the paper is not a comprehensive agenda for basic research in Europe. It focuses on areas where our Member Organisations and scientific Standing Committees believe basic research and their own expertise can make the most promising contribution to the EU's objectives. There are many other areas where basic research can have a significant impact but the paper's primary aim was to address the EU's specific aims and how our Member Organisations could complement these. This is particularly important given the significance of EU Framework Programmes for funding scientific mobility and training. The paper proposed five central scientific themes:

- information and communications technology;
- industrial technologies for complex systems and products;
- molecular mechanisms in life and health;
- sustaining our environment;
- change and stability in European society.

It also put forward proposals to build European research capacity, including facilities and training, and to manage research programmes more effectively.

● But will the recommendations to the EC be adopted?

It's always difficult to predict outcomes, especially in a field as complex as a Framework Programme, but we believe that *Beyond Framework Programme IV's* influence on Commission thinking could already be seen in the Commission's orientation paper for FP5 *Inventing Tomorrow* and in its subsequent working paper *Towards the Fifth Framework Programme.* The ESF has established an effective dialogue with key Commission officials as well as with members of the European Parliament's Committee on Research Technology, Development and Energy. A number of meetings have already been held and the Foundation will continue to be involved in the evolution of the next Framework Programme and to provide comments on the Commission's FP5 working documents as they emerge.

● What are you doing to ensure that scientific issues not covered in the FP5 submission are effectively addressed?

We are currently developing a four-year activity plan for the ESF in which we will deal with precisely this issue. A number of principal scientific themes have already been identified in *Beyond Framework Programme IV*, but the Foundation is well aware that an independent scientific agenda will include other important scientific issues. We need to ensure these are properly addressed to maintain and progress Europe's scientific base. The way this plan is being developed is also indicative of the ESF's 'new' approach. Initially, our five Standing Committees, who include leading scientists and representatives of Member Organisations across all the scientific disciplines, from the physical sciences to the social sciences, are involved in drawing up a possible agenda. This draft document will then be circulated to all our Member Organisations for their comments before finalisation so that it genuinely reflects state-of-the-art opinion.

● On a more detailed level, how will the ESF ensure that new and innovative ideas for European research are allowed to progress?

It's important that the ESF's initiatives and activities provide European added value without duplicating its Members' national efforts. In general, this means that they should be in line with the policy considerations of our Member Organisations. However, this does not imply that ESF activities are dominated by a 'top-down' approach. Sufficient room is provided for the development of creative, high quality, scientific initiatives emanating from the scientific community. In a number of domains, an increasingly useful instrument in implementing such a 'bottom-up' approach will be the Foundation's exploratory workshops. After a call for proposals from a particular scientific discipline, broad enough to allow the most innovative ideas to be put forward, exploratory workshops are run to establish, on a systematic basis, the feasibility of individual submissions. The question of whether they merit support at a European level or should be carried out at a national level receives special attention. The Standing Committees for the Medical Sciences (EMRC) and for the Life and Environmental Sciences (LESC) are already operating this type of system and other Standing Committees are now following suit. The Standing Committee for the Social Sciences (SCSS) is employing a similar technique in its exploratory grants scheme, while the Physical and Engineering Sciences Standing Committee (PESC) has recently launched a two-stage process for programme proposals. These types of approaches aren't just more systematic and fairer to scientists, they also help to focus the debate on specific scientific issues and allow the best and most suitable ideas to emerge.

● Member Organisations are clearly critical to the success of all these initiatives. What has the ESF done to strengthen its ties with them?

In line with the recommendations of the strategic reappraisal, we are communicating much more widely and systematically with our Members. Indeed the growing strength of our links with our Members was instrumental in making our FP5 position paper such a widely acknowledged document. Closer relationships with them have also enabled the ESF to probe important policy issues such as the use and value of foresight exercises. There are plans to expand our activities in this area to include examinations of the changing role of European research funding and of best practice in research assessment. As more scientific institutions join the ESF - and, in 1996, three new Members joined, two from Italy and one from Sweden - the Foundation will be in a stronger position to claim to be the voice of European science and to offer policy makers and national bodies an increasing breadth and depth of scientific expertise.

● But the ESF isn't the only representative scientific body in Europe. What are you doing to build bridges with other bodies?

Partnerships hold the key to success in basic research, not just partnerships between the ESF and its Member Organisations, but between the Foundation and other representative bodies in Europe, such as the European Science and Technology Assembly (ESTA), the Academia Europaea, All European Academies (ALLEA), the Association of European Universities (CRE) and the Confederation of European Union Rectors Conference. We need to build these types of bridges if we are to develop a coherent strategy for European science. During the year, significant progress was made on this front thanks largely to the ESF's more focused approach to European policy. For example, CRE contributed an annex to the ESF position paper, *Beyond Framework Programme IV*, setting out its views on FP5, and in 1997, the ESF has agreed with the Academia Europaea to establish a joint workshop on the impact of electronic publishing on the scientific community. Our ties with the EC were also enhanced, reflected in the fact that Professor Jorma Routti, Director General of the European Commission's DGXII responsible for science, research and development, is the Commission's representative on our Executive Council. He also gave a keynote address to our General Assembly, as did the President of ESTA, Dr Jan Borgman.

● What about links with non-European scientific bodies?

Scientific laws are the same across the world and the scientific issues that different continents are dealing with are very similar to those being addressed in Europe. We cannot afford to adopt a Eurocentric view. If we want to make real progress and avoid unnecessary duplication of effort, increasingly we have to share our knowledge, insights and even resources with our peers across the globe. In 1996, for instance, our Standing Committee for the Social Sciences held workshops on transport research with the USA's National Science Foundation (NSF). Together with the European Commission and the International Association for the Promotion of Cooperation with Scientists from the New Independent States of the Former Soviet Union (INTAS), the ESF also collaborated with the International Council for Scientific Unions (ICSU) to explore ways that the funding of basic research could be encouraged in the former Soviet Union and central and eastern Europe. In addition, the ESF's links with the increasingly important region of south east Asia have been enhanced by the work of the ESF Asia Committee. The National Science Foundation of China also accepted our invitation to attend the ESF's General Assembly as observers. In the future, in order to strengthen such international ties, we expect to extend similar invitations to key agencies from other non-European countries.

● Closer to home, what were the ESF's key scientific activities and highlights during the year?

In 1996, five new research programmes were launched. One of the most important was the multidisciplinary *Environment and Health* programme which is being carried out in conjunction with the World Health Organisation and the EC. This subject was discussed in detail in last year's annual report. The portfolio of medical initiatives was given a further boost when the European Medical Research Councils (EMRC) launched a new programme on the *Immunogenetics of Allergy* which will increase the scientific community's understanding of the processes behind the body's immune response towards allergies such as asthma, a growing problem across Europe. The EMRC also organised a workshop on Transmissible Spongiform Encephalopathies (TSEs) within 10 weeks of the new variant of Creutzfeldt

Jakob Disease (CJD) being made public, an indication of the ESF's ability to respond rapidly to major and sudden events.

The Standing Committee for the Physical and Engineering Sciences (PESC) made considerable progress too, launching programmes on *Highly Structured Stochastic Systems* and *Applied Mathematics for Industrial Flow Problems*. Together, these two programmes will fill major gaps in Europe's understanding of the mathematical algorithms needed to produce advanced software, as well as the techniques required to integrate these into computer systems. These insights should also have a significant impact on industrial processes, environmental modelling and many other activities. The portfolio of environmental initiatives, meanwhile, was enhanced by the creation of a new programme on *Plant Adaptation* to environmental change. Currently, 20% of crop failures are due to plants' inability to adapt to environmental changes.

The ESF's series of European Research Conferences (EURESCO) played an equally important role in the development of European science. These events not only enable top scientists to discuss cutting-edge science in an informal 'Gordon-conference style' environment, they also give young scientists the opportunity to participate in the debates and establish contacts that often last throughout their careers. During 1996, the ESF organised 33 of these conferences covering subjects as diverse as chaotic phenomena in nuclear physics and social exclusion and integration in Europe.

● Last year, you talked about the possibility of the ESF acting as a clearing house for proposals for large research facilities. How far have you got with this concept?

Drawing on the expertise of the Foundation's Member Organisations, the ESF is currently considering a dozen large research facility initiatives, including a 100 Tesla European laboratory and a European social survey. Our understanding of large facilities and research infrastructure is not limited to the traditional types of big single use installations. We also recognise that cooperation in the form of networks of research instruments is just as important, for example, databases in the social and economic sciences or medicine, and also networks of scientific libraries or botanical gardens.

National bodies are also turning to the ESF for advice. During the year, for example, the ESF was approached by the Austrian Academy and Ministry for Science to evaluate proposals for two new facilities in Austria: one for a new neutron source, the other for a crystal growth facility. However, from a pan-European perspective, the question of large-scale facilities goes deeper than simply drawing on our Member Organisations' expertise to evaluate the scientific merits of developing a particular facility. It's equally important to ensure that the scientific community optimises its existing facilities. The most effective ways to run these resources and to ensure the widest possible access also need to be established.

● What is the ESF doing to ensure that its evaluations of scientific proposals are being conducted fairly and cost-effectively?

The ESF has established a policy of regularly evaluating the performance and 'transparency' of its committees and operational mechanisms. In 1996, for instance, the ESF's scientific networks scheme was independently reviewed and subsequently repositioned to better meet changing strategic and scientific needs. In addition, the ESF carried out detailed independent reviews of all its Associated Committees - the Committee on Radio Astronomy Frequencies (CRAF), the European Space Science Committee (ESSC), and the Nuclear Physics European Collaboration Committee (NuPECC). Although the reviews concluded that these Committees performed important roles, the process also highlighted the need for greater focus and cost-effectiveness in some cases, as well as the need for closer links between Associated Committees and Standing Committees. These points are now being addressed, especially the cost issues. Like our Member Organisations, we are acutely aware of the need to operate cost-effectively. Our income, after all, is the sum of our Member Organisations' contributions and, as such, we are experiencing the same financial pressures as them. To ensure that this money is channelled into the most promising scientific activities - and seen to be channelled in these areas - the ESF is developing a more systematic and transparent evaluation process for scientific proposals through its Standing Committees with the support of independent outside experts. Calls for proposals, especially for workshops and for scientific networks, are also being more widely publicised.

● How has the ESF improved the dissemination of its information and results?

For the sake of the long-term development of basic science, the ESF needs to win support both inside the scientific community and beyond, including the general public. The Foundation has continued to make significant progress in this field. During 1996, we further developed our traditional publishing activities while at the same time making increasing use of modern communication technologies. ESF's World Wide Web site now has some 700 pages, 9,000 links and is attracting 190,000 accesses or 'hits' each month. It provides access to up-to-date information about the Foundation and to its latest publications, such as this annual report. We also produced a number of new brochures during the year, including one which explains the workings of our network scheme following its review, and generated positive press coverage for the ESF's activities.

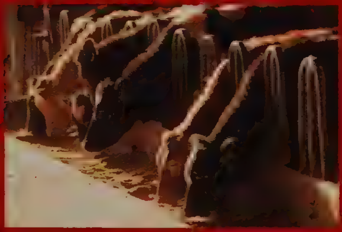
● How do you see 1997 developing?

The ESF has had a promising start to the new year. Plans for 1997 include finalising the four-year plan 1998-2001, reassessing and adapting the EURESCO conference scheme and, through a series of science policy symposia, addressing the changing nature of science funding and best practice in research assessment. Overall, we're quietly optimistic and believe that, with the present focused and systematic approach, the ESF is well-positioned to move forward.

Peter Fricker, *Secretary General, ESF*

Scientific insights

This section provides an insight into some of the work that the ESF supports. While it is necessarily selective and only represents a fraction of the Foundation's activities, it aims to give a flavour of the breadth of the ESF's activities and their significance for Europe as a whole.



Contents

Medical sciences 14

Maddening scientific challenge 14
Directing the politically-charged debate about 'mad cow' disease back to the scientific issues.

New model for cancer therapy 16
An ESF workshop examined how a highly successful therapy for a rare form of leukaemia might provide the paradigm for other oncological problems.

Steering bioethics in the right direction 16
The ESF has ensured that the voice of European science is heard in a major bioethics debate.

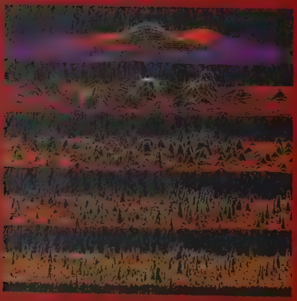
Combating oral cancer 17
Analysing the link between the environment and the human genome in the development of oral cancer was the focus of an exploratory workshop.

EURESCO focuses immunology debate 18
A recent conference has helped focus scientific attention on the challenges that lie ahead in tackling infectious diseases.

EMRC moves forward 18
Professor Philippe Lazar reflects on his period as chairman of the EMRC.

Breath of fresh air 19
Researchers are looking at the genetic causes of asthma, a growing problem in Europe especially for children.

Health boost 19
A new research programme on health and the environment lifts off.



Life and environmental sciences **20**

Systematic advance 20
A new consortium will unite Europe's taxonomic facilities.

Bird's-eye view of tropical forests 21
Researchers are drawing up plans for a moveable crane that will enable scientists to study the development of tropical forests in greater detail.

Europrobe unlocks deep secrets 22
Identifying possible new sources of oils and minerals are just two of the benefits of the ESF's Europrobe programme.

Exploring new frontiers 23
Four exploratory workshops have indicated new areas that might be worth pursuing through research programmes.

Fossil fuel 23
A central database of information about Europe's huge collection of fossil insects will be one of the products of a new ESF network.

Planting new ideas 24
Unlocking the key to why certain plants are better at adapting to environmental change than others.

Lift off 24
A former Russian spy plane has revealed a new polar stratospheric cloud.

Physical and engineering sciences **25**

Astronomic advance 26
An ESF network is giving astronomers greater and easier access to the wealth of computational techniques spread across Europe.

Larger role for ESF as 'clearing house' 27
The Foundation continues to demonstrate its ability to evaluate the scientific case for proposals for large research facilities.

Taming technology 28
As technological systems become more complex, an ESF programme is investigating ways to control them more effectively.

Stochastic systems step forward 29
Advanced statistical techniques will be employed in a new programme that will help scientists model gene behaviour and other complex relationships.

Light work 29
A EURESCO conference has been exploring the possibilities of quantum optics.

Going with the flow 29
Mathematicians are joining forces in a new programme to tackle important industrial flow problems.

the Transformation of the Roman World
AD 400-900

Humanities 30

Asian drive 30
A new strategy is being formulated to ensure that the expertise of Europe's Asian specialists is fed into policy debates.

Artful view of science 32
A new network is revealing the longstanding and important contribution of visual imagery to the development of science.

Transforming perceptions of the post-Roman world 33
Museums across Europe have come together to exhibit the findings of an ESF research programme.

Republicanism revisited 34
Pan-European collaboration is prompting academics to rethink their views on republicanism.

Humanities reveal their contemporary relevance 34
Understanding life within a 'peripheral' Islam.

Social sciences 35

On the road to transatlantic collaboration 36
European and US researchers have teamed up to address common transport problems.

Youthful network comes of age 37
Social scientists are trying to get to the root of escalating youth unemployment.

Smart move 38
Social and computer scientists are pooling their knowledge to devise brighter expert systems and learning tools.

New territories for social science research 38
Professor Guido Martinotti looks back on five years as SCSS chairman.

Risk review 39
Dealing with public perceptions of risk.

Blueprint for major survey takes shape 39
A major survey of European social and political attitudes moves closer to becoming a reality.

The virtues of diversity 40
Europe's differences might prove to be its most effective competitive weapon.

Medical sciences

The EMRC has established itself as an important body for stimulating collaborative initiatives amongst Europe's basic medical research community. Its recent contribution to the ESF's submission for the next Framework Programme is a case in point and I would like to thank my predecessor, Professor Philippe Lazar, for making this happen and all his other work during his chairmanship.

The challenge we now face is to continue to make the voice of basic medical scientists heard, especially where there isn't an immediate and obvious application for their research. An important factor in our ability to achieve this goal will be how we communicate our messages. On one level, this will require developing stronger links with policy makers and other opinion formers in Europe. It will also demand that we take into account the diverse and sometimes competing priorities and concerns of individual countries. All countries appear to agree that public health is a prerequisite for 'public wealth', the difficulty is finding a consensus that will enable Europe to form a common medical research strategy.

The EMRC can play a useful role in bringing countries' medical research communities together to achieve this consensus in the same way that we did for the Foundation's Framework Programme submission. We also need to find new ways to enable younger researchers to get their careers airborne. Creating new mechanisms that will facilitate exchanges across Europe is one possibility. In my new role as Chair of the EMRC, I look forward to addressing these and other issues in conjunction with my colleagues on the Committee.

Professor Leena Peltonen
Chair of the European Medical Research Councils (EMRC)

Maddening scientific challenge

When a new strain of Creutzfeldt Jakob Disease was made public early in 1996 it didn't just stir the interest of the scientific community it also sparked fears of an epidemic amongst Europe's beef eaters.

The problem was that the UK experts who examined the first findings of the new CJD could not provide governments and the public with a definitive yes-or-no answer to the question 'Is this new CJD caused by eating beef from 'mad cows'?' Instead, they could only say that it was the most plausible explanation, and that it would take a considerable time before research could provide a precise estimate of the risk, if any. In a clear illustration of the major problems that politicians and the public have in dealing with uncertainty when thinking about risk, European governments found this difficult to swallow.

While European politicians started enforcing blanket bans on imports of British beef, the EMRC's chairman, Philippe Lazar, and its executive group responded by joining forces with the UK's Medical Research Council (MRC) to convene a workshop to try to assess the true scientific threat. Within two and a half months of the discovery of the

Assessing the risk
Just weeks after the discovery of a new variant of Creutzfeldt Jakob Disease, an ESF workshop brought together scientists from across Europe to focus on the potential link between CJD and 'mad cow' disease.

Photothèque Pluriel

new variant of CJD, leading experts from Europe's medical and veterinary communities met in London for a two-day workshop on the *Comparative epidemiology of human and animal diseases related to the presence of PrP*, an unusually fast response by international scientific standards.

"It was important to give scientists the opportunity to talk to the people who were making the CJD findings and for the credibility of their findings to be examined rationally from a variety of scientific perspectives," says Peter Dukes at the MRC, one of the organisers of the joint ESF/MRC workshop. "At the time, the scientific evidence was being overshadowed by all the political activity.

"We focused on the potential link between CJD and BSE. Scientists understood, and even politicians were beginning to understand, that establishing the strength of the BSE-CJD link would probably take several years. Research strategies would need to be based on a wide range of expertise and research approaches. By bringing together leading biomedical, clinical and veterinary researchers from across Europe, many of whom had complementary expertise but had not previously debated the 'mad cow'-CJD issue together, we were able to explore research approaches to establish whether a link existed. How could we combine epidemiologies of cow and human populations to find out whether the new cases of CJD were a statistical blip or the beginnings of a full-blown epidemic? How could we tell whether maternal transmission, for example, was a factor? What mathematical tools do we need to model an epidemic moving into the human population?

"The scientific evidence was being overshadowed by all the political activity"

"Although we don't yet know the answers to these questions, the workshop was catalytic in focusing the BSE-CJD debate on the scientific evidence and challenges. More importantly, it has created new networks of European scientists that will help us discover whether there genuinely is a significant threat to humans who have been eating BSE-infected beef," says Dukes.

The workshop's scientific coordinator, Professor Peter Smith of the London School of Hygiene and Tropical Medicine, adds: "international studies will be essential in understanding disease mechanisms as well as providing effective surveillance. In organising these workshops at very short notice, the ESF and MRC succeeded in bringing together leading scientists in the field from all over Europe to the UK, the focus of the current epidemiological research."

Ingrid Wünning, workshop organiser and scientific secretary to the EMRC, comments: "It was a good example of how the ESF can act as a catalyst to bring scientists together and create the critical mass required for the scientific community to respond rapidly to future funding opportunities from other bodies such as the EU."

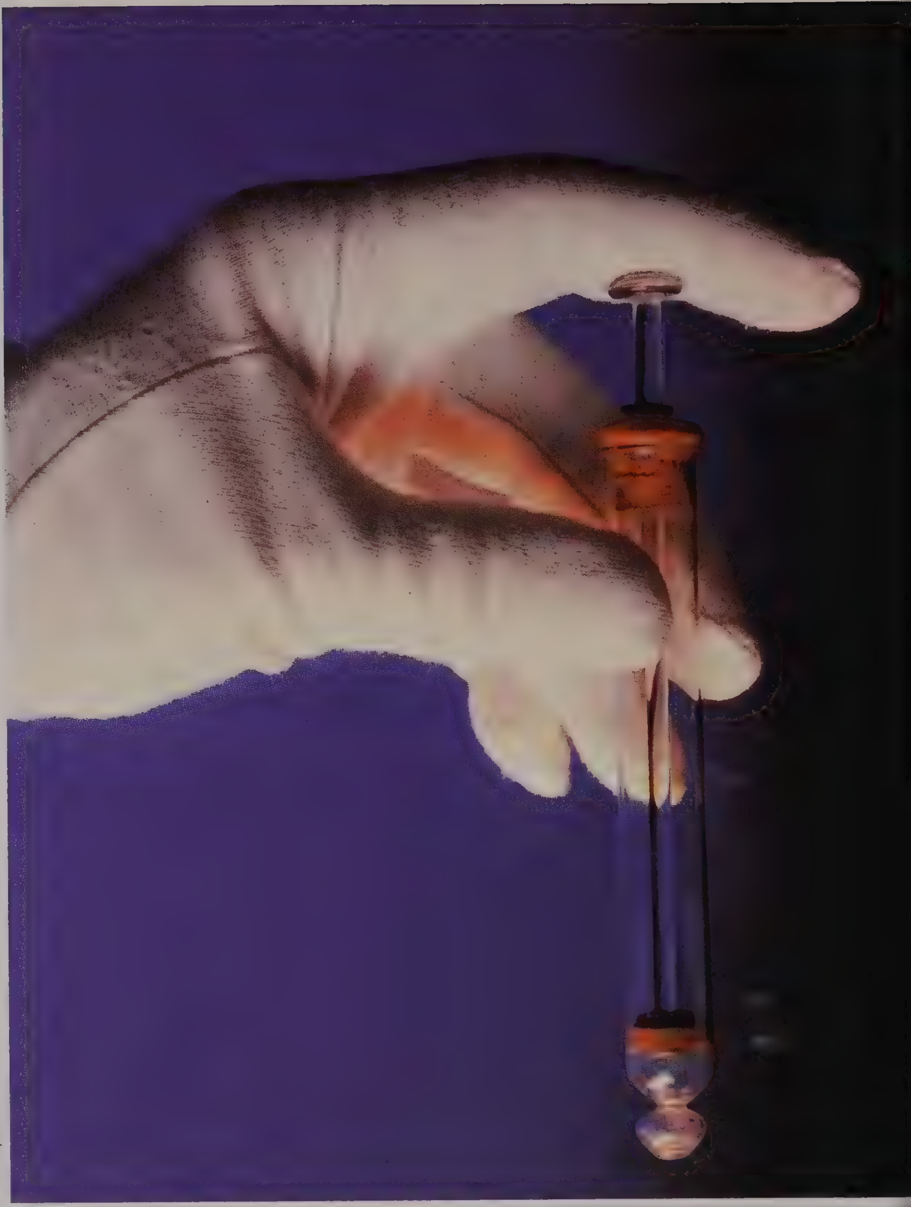
New model for cancer therapy

A novel and highly successful therapy for an unusual type of leukaemia could provide a model for the treatment of other cancers, according to the participants of an ESF exploratory workshop.

Over the last seven years, researchers have found that acute promyelocytic leukaemia, a rare strain of the disease that is only seen in hospital hematology departments about twice a year, can be successfully treated by differentiation therapy. In 95% of cases, patients have total remission. The therapy allows malignant cells to continue to grow as if they were normal 'differentiation' cells; once they reach their full life-cycle they die like other differentiation cells, preventing them from affecting their healthy counterparts. "To date, this is the only leukaemia that can be treated by the induction of differentiation," says Christine Chomienne at l'Hôpital Saint-Louis in Paris. "Its big advantage is that it avoids relying exclusively on chemotherapy, which kills malignant and healthy cells, and it has a very high remission rate."

In 95% of cases, patients have total remission.

Chomienne is part of a group of European scientists who were brought together at an ESF exploratory workshop to investigate ways that this differentiation process could be applied to other cancers in combination with chemotherapy, which has been shown to improve remission rates. "We're trying to establish models for a number of cancers, including cancer of the nervous system and another type of leukaemia. It was important to do this on a European level for several reasons," she says. "First, to bring together all the key molecular laboratories working in this field and all the physicians taking part in related trials. More generally, it's important to carry out European trials to obtain the necessary numbers of cases."


Photothèque Pluriel

Steering bioethics in the right direction

The ESF underlined its strategic role of providing advice to policy makers when it made significant contributions to the new Convention on Human Rights and Bioethics which was approved by the Council of Europe's Steering Committee on Bioethics (CDBI) in June 1996.

Conventional ethics

ESF ensured that researchers' views were heard in the development of the Council of Europe's Convention on Human Rights and Bioethics.

The Convention provides ethical guidelines for clinicians and researchers, covering a broad spectrum of issues, from human embryo research to the question of individual consent. When the CDBI started drawing up the blueprint for it in 1991, the ESF was concerned that researchers' views weren't being properly represented and managed to obtain a seat on the Steering Committee as an observer.

It proved to be a valuable move. As the Convention took shape, the Foundation's representative, David Evered from the EMRC, was able to influence its development to ensure that necessary research would continue within an appropriate ethical framework.

"One of our main concerns centred on the assumption that the individual will necessarily always place his or her interests above those of society. There are times when individuals may choose not to do so and engage in activities with deleterious effects, such as smoking. But equally, they may choose to contribute to activities which in the long-run are beneficial to society, for example, by participating in research.

"Another area we were worried about was the issue of consent. There are a number of situations where research is important but it is not always possible to obtain an individual's direct consent. For example, if a patient is suffering from dementia or is unconscious. Children are also seldom in a position to give their consent either.

"On the subjects of individual interest and consent, we were able to persuade the CDBI to agree a formulation that would take our views into account. However, there are still a number of unresolved issues, such as embryo and genetic research, as well as the question of xenograft materials, for example using mammalian tissue for organ transplantation. These areas will be addressed through protocols attached to the Convention."

Combating oral cancer

Oral cancer isn't just the sixth most common cancer, killing thousands of people every year, it's also a persistent disease that appears to result from complex interactions between the environment and the human genome. Although theories about these links have existed for some time, an ESF workshop has created the momentum to put these ideas to the test.

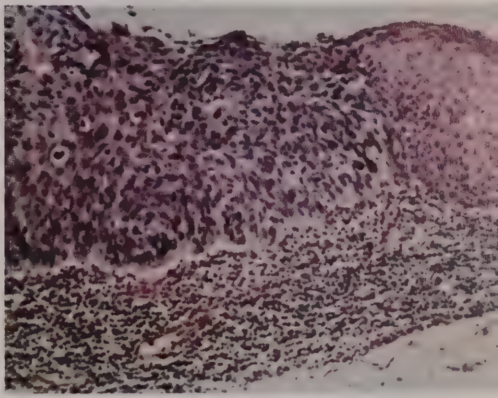
The main problem with oral cancer is that when an initial lesion or tumour is surgically removed another one tends to crop up, leaving patients with a fairly bleak prognosis. Traditionally, multiple tumours like these were thought to be due to problems in the epithelial cells that line the mouth but there's a growing belief they may be caused by aberrations in the cells beneath the connective tissue. Environmental carcinogens such as tobacco and alcohol have been cited as possible culprits. Other studies have found an association between deficiencies in host DNA repair mechanisms and multiple primary oral cancers.

During 1996, the ESF held a workshop to explore these possibilities in greater depth, based on the assumption that there is a complex multifactorial system underpinning these tumours. "This view isn't new but what made the workshop novel was that it brought together a diverse range of scientific expertise from across Europe to understand the problem," says Professor Seth Schor at the University of Dundee's Dental School, who organised the meeting. "With complex systems like these you need a wide range of skills and knowledge to understand them."

> **"This would be the first time time that these theories have been put into practice."**

The discussions confirmed the scientists' opinion that there would be considerable mileage in investigating this issue more fully and they are now considering creating a research network to do this. "This would be the first time that these theories have been put into practice," says Schor.

The researchers will not, however, be focusing exclusively on oral cancer. "Our aim is to use oral cancer as a paradigm for understanding other cancers that exhibit a tendency to develop second primary tumours, such as carcinoma of the breast."


Seth Schor

Oral cancer
A micrograph depicting the transition between normal oral mucosa (right side) and carcinoma in situ.

Public - private sector progress

The drive to establish stronger links between publicly-funded basic research and the private charitable sector moved up a gear during 1996 when the ESF organised a symposium involving leading scientists and members of the private sector, including the present chief executive of the Wellcome Trust and the former head of the Volkswagen Stiftung. "There are certain opportunities in medical research where private and public sector bodies have shared objectives which can be better achieved through the development of complementary and even collaborative activities," said the EMRC's David Evered. "An important first step towards launching such activities is to establish an effective dialogue between the two sectors and the EMRC's recent symposium is just one example of the ESF's ability to facilitate such exchanges."

EURESCO focuses immunology debate

A recent European Research Conference (EURESCO) has helped focus scientists' minds on the challenges that lie ahead in tackling infectious diseases.

When the first EURESCO conference on this subject was held in 1995, Professor Pearay Ogra commented: "Nature introduces virtually all infectious agents and environmental macromolecules into the mammalian host via the mucosal portals. It therefore seems logical to consider mucosal surfaces as the ideal route for the introduction of antigens to modulate human responses and to prevent diseases with infectious agents and auto-immune processes."

So, the latest conference in this series, held in 1996, concentrated on 'oral and mucosal vaccines' as its central theme. Chaired by Professor Jan Holmgren, the conference identified four key steps needed to develop suitable vaccines:

- full structural, genetic and physiological characterisation of the agent. These agents should be expanded to include non-living infectious protein particles or 'prions';
- knowledge of the natural history of agent-host interactions;
- a clear understanding of the objectives of the proposed intervention;
- data on the host's capacity to respond to a particular intervention, including information about how aged, undernourished and other groups' responses could be compromised.

The conference noted that mucosal immunology research has made considerable progress, especially in respect of host responses to infections and candidate vaccines, both in terms of protective immunity and associated harmful or undesired results, including down-regulation of a particular desirable host-protective cellular or humoral immune response. However, if greater advances are to be made, studies in human volunteers and pilot field studies for the next generation of candidate vaccines need to be incorporated at an early stage in research programmes.

To achieve this, and to ensure long-term funding of this type of research, delegates at the conference argued that the scientific community needs to convince policy makers and other bodies that mucosal immunology research isn't just a question of scientific curiosity but that it has significant financial and social benefits.

For details of the EURESCO conference scheme, see page 66

EMRC moves forward

When Professor Philippe Lazar became the chairman of the European Medical Research Councils' (EMRC) Standing Committee in 1994 the ESF was at a turning point. The Foundation was revising its strategic role and he took this opportunity to steer the EMRC in a new direction. Although nothing changes overnight, his initiatives have given the EMRC greater focus, helping the medical research community to lobby more effectively for EU funds and to develop initiatives more effectively in its own right.

"We had four main goals," says Lazar, who stood down as EMRC chairman at the end of 1996. "First, to make the EMRC a more efficient and transparent organisation. Second, to foster greater interaction between our Standing Committee and the ESF's four other Standing Committees. Medical science cannot develop outside the general movement of science. We need to take a more multidisciplinary approach and cross-fertilise ideas. Our third objective was to establish closer relationships with the EU, an important source of funds. Finally, we wanted to promote the EMRC as a source of expert advice to governments, industry and other bodies. They have an urgent need for advice and if we can get in early, we are in a stronger position to have a say in policies that could affect the future shape of the scientific community.

"The challenge was to organise the tools at the EMRC's disposal, in time and space, to achieve these goals. At the time, the ESF had four tools: workshops, European research conferences, scientific networks and *à la carte* scientific programmes. But these were used independently. My strategy was to link them together to create a coherent framework for exploring and developing new ideas rapidly.

"In particular, I argued that exploratory workshops, for which EMRC has now begun to issue regular calls for proposals, and European research conferences should be used to test new ideas at the frontiers of science, giving scientists the opportunity to plan and apply for scientific networks funded by the ESF. In terms of longer term finance, the networks

Philippe Lazar

As EMRC chairman Professor Lazar oversaw a period of rapid change.

should be encouraged to turn to the EU and other European funding sources first, not the ESF which has only limited resources. However, if this is not possible, the network should apply for funding as one of the ESF's *à la carte* programmes." One of the main advantages of interlinking the ESF's various tools like this is that it allows scientists to build up a carefully argued case for further funding from the EU and to establish the high-level teams needed to obtain this type of money. It also means that they have everything in place when the call for proposals arrive. "Normally, scientists are given very little time to respond to calls," observes Lazar.

To alert the medical research community to developments at the ESF, he launched a *European Medical Research* newsletter which also covers other issues, such as policy debates.

"We need to take a more multidisciplinary approach and cross-fertilise ideas."

However, Lazar cautions against becoming too dependent on the EU. "Although the EU is important, we need to remember that, collectively, Europe's research councils have a far larger scientific budget. We should still be developing complementary research programmes," he says. "The EMRC's new strategic approach to formulating research programmes through workshops and other tools is an ideal way to do this."

During his time as chairman of the EMRC's Standing Committee, Lazar believes this system worked relatively well, although he acknowledges that new approaches like these take time to be widely accepted. Nevertheless, the fact that other ESF Standing Committees have been adopting similar strategies suggests that it could soon become an established way of working.

Breath of fresh air

Despite advances in the treatment of asthma, the incidence of this potentially fatal disease is not only increasing, affecting an estimated 800,000 people in Europe, it is also having a growing impact on children. However, a new ESF programme could help find the key to more effective cures.

The Foundation's programme on the *Immunogenetics of Allergy* will be looking at the genetical causes of asthma and other 'atopic' diseases, such as eczema, as well as the allergens that trigger off the excessive immune responses associated with these ailments.

"It's already known that the HLA gene plays an important role in asthma but there are five or six other gene candidates that haven't been isolated yet," says Dominique Charon, the programme's coordinator. "We intend to look more closely at these by collecting data from European families suffering from asthma and screening their genomes."

Researchers will also be investigating the allergens that cause atopic diseases, which affect nearly one in two people at some point in their lives. "Environmental factors, notably pollution, are believed to be responsible for these allergens but the link between the environment and asthma, for example, isn't clear. It's unlikely that external air pollution is the main cause as eastern Europe has a lower incidence of asthma than western Europe despite having higher levels of external pollution. Household pollution, including domestic dust mites and paint fumes, seems a more probable candidate."

Europe provides the ideal laboratory for this type of work. "The main advantage of Europe is that it has a very diverse population which enables us to make comparisons. People in the north, for example, have different genetics to those in the south. The environmental conditions across the region are also different.

"Another practical reason for carrying out this research on a pan-European basis is that no single laboratory has all the necessary expertise in genetics, immunology and the other disciplines needed to tackle this problem. Collectively, we do."

For programme details, see page 49

Health boost

Growing concerns about the links between environmental degradation and ill-health have prompted the ESF to join forces with the World Health Organisation and the European Commission in a unique initiative.

In 1996 the ESF, in collaboration with the EC and WHO, launched an *Environment and Health* programme to establish research priorities for this field. Drawing on the expertise of a broad cross-section of disciplines, from the environmental sciences to physics and the social sciences, the programme will focus on risk assessment in five key areas. These include indoor air pollution; ambient air particulates and human health; the effects of the environment on cognitive functions; the quality of drinking and recreational water; and children and accidents. Funded by 18 Member Organisations in 13 countries, these subjects will be discussed at a series of workshops leading to a common research plan which will be presented at the 1999 Intergovernmental Conference on the Environment and Health.

For programme details, see page 48

Robert Krnes

Environment and health

The quality of drinking and recreational water is one of the themes of a new scientific programme.

Life and environmental sciences

When the Life and Environmental Sciences Standing Committee was created out of the ESF's former European Science Research Councils in 1995 we inherited a number of programmes and networks. Over the last year we have spent a considerable amount of time creating our own momentum and identity by developing a new series of scientific activities which promise to produce some highly innovative results and to foster basic science at a European level.

Increasingly, these are focusing on a limited number of priority areas including: natural hazards, trends and risks; population growth and its environmental impacts; and genome biology. We are now considering full proposals for seven scientific programmes and, encouragingly, a large proportion of these seem to be of excellent quality, innovative and addressing priority areas for European science-led activities. Exploratory workshops have been a particularly valuable mechanism for identifying imaginative and top-quality scientific proposals. The high response to our call for proposals has been especially heartening, indicating that our priorities are in line with those of the scientific community as a whole.

In the coming year, we will consolidate our position even further by widening our portfolio of scientific activities and working with our Member Organisations to ensure a broad spectrum of activities with a European dimension in the life and environmental sciences.

Professor Werner Rathmayer
Chairman of the Standing Committee for the Life and Environmental Sciences (LESC)

Systematic advance

Nearly three-quarters of the world's leading natural history collections are housed in museums across Europe but various obstacles, including financial constraints, have prevented researchers from exploiting the full potential of these resources. A novel consortium promises to sweep away many of these hurdles.

Emerging from an ESF network, the Consortium of European Taxonomic Facilities (CETAF) has brought together 10 major European museums from eight countries to find ways to make it easier for systematic biologists to access Europe's collections.

At the moment, these facilities are spread across scores of unlinked sites, making it difficult for researchers to tap into their resources. The high costs of using these collections also deter young visiting researchers.

To overcome these problems, CETAF is considering a number of solutions. One possibility is to create a central database on the

Internet that would have a standard charging structure and be open to researchers across the world, not just Europe.

"We need a common on-line gateway," says the CETAF's Wouter Los at the Institute for Systematics and Population Biology at the University of Amsterdam. "But this isn't simply a question of establishing a database, we also need to create appropriate software and search engines and to disseminate the most important information.

"Inevitably, this will cost money, which is in short supply at many institutes. One of the advantages of CETAF is that, collectively, we have the critical mass and authority to discuss funding issues like these with European policy makers such as the European Union. It's a good example of the benefits of European cooperation."

Other issues being addressed by CETAF include promoting training for systematists, improving the curation and conservation of Europe's collections and coordinating scientific policies for natural taxonomic facilities across the region.

For network details, see page 62

Wouter Los

Corridors of knowledge

A new consortium aims to help researchers exploit more fully Europe's natural history collections.

Wilfried Morawetz

Craning to get a view

ESF scientists are drawing up plans to build a movable crane to study tropical forests' high-level biodiversity.

Bird's-eye view of tropical forests

Plans are taking shape for a new device that will give scientists a deeper understanding of the processes that enable thousands of different plant species to co-exist in the world's tropical forests.

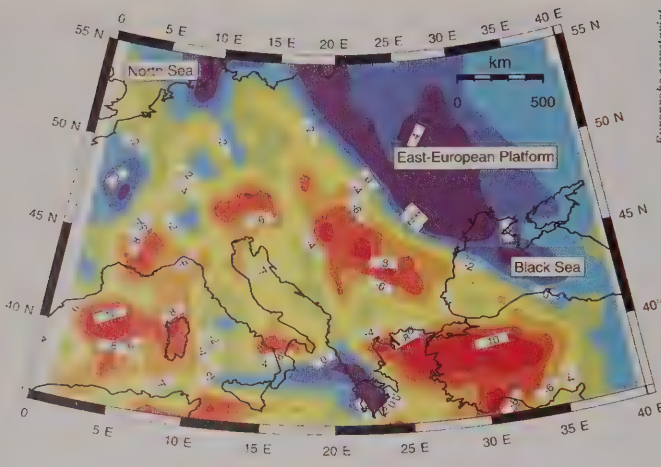
It has been estimated that three-quarters of the world's species of terrestrial organisms live in tropical forests. Until recently, however, it has been relatively difficult to study these organisms as a high proportion are located in the trees' upper canopies, out of reach of many traditional research techniques. Various methods have been used to overcome this hurdle, including canopy walkways and even balloons that deposit observation rafts on the tree tops, but these have had their drawbacks. Now, an ESF scientific programme is considering creating a mobile crane that would be able to move stealthily through the forest, giving researchers a bird's-eye view of the forests' high-level biodiversity.

"It's the best way to get access to the canopies as it allows you to approach them silently without disturbing them," says Professor Wilfried Morawetz, a member of the Steering Committee of the ESF's *Tropical Canopy Research* programme.

One issue that Morawetz and his team are keen to investigate is the question of 'crown shyness', a process where the tops of trees keep a distance of about 20 centimetres from each other. "Crown shyness regulates forests by enabling a wide range of species to grow and co-exist without one species dominating but we don't know how the process works. Previously, we've had to rely on photographs to study this phenomena. With a movable crane, we will be able to study it first-hand as well as the interactions of plants and animals, notably ants, butterflies, bees and bats, which play important roles in the regeneration of tropical forests."

Neither the site, nor the technical specifications, for the crane have been finalised but members of the programme have been studying a similar fixed crane in Venezuela to learn from its lessons.

For programme details, see page 52



Europrobe secretariat

Shear wave velocity variations (in %) *underneath Europe at a depth of 80km showing the low velocities between Phanerozoic Europe in the west and high velocities between the East-European platform (modified from Zielhuis and Nolet (1994): Science, 265,79-81)*

Europrobe unlocks deep secrets

Companies involved in oil, gas and even diamond exploration are following closely the progress of a major research programme that is harnessing the skills of earth scientists across eastern and western Europe.

Now in its fifth year, the ESF's *Europrobe* programme has brought together over a thousand geoscientists throughout Europe to study the tectonic evolution of the Earth's crust and mantle, from the Urals to the Iberian peninsula.

"Unless you understand the dynamic processes that govern the evolution of the Earth's lithosphere, you can't make reliable predictions about the possibility of finding resources, say, oil, gas or ore bodies," explains *Europrobe's* Herman Zeyen at Uppsala University in Sweden. "You also need these insights to predict the likelihood of earthquakes. Geophysicists and geologists are joining forces to explore the deeper earth using special geophysical and geochemical techniques to relate rocks at the surface to processes at depth.

"Europe is an ideal environment in which to study these processes. Its terrain is enormously varied. Eastern Europe's crust, for example, is older, thicker and more stable than its counterpart in the West. Western Europe, in turn, is linked to the East by a complex suture zone stretching from Denmark through to Poland and Romania."

Using the latest technology, the multidisciplinary programme is combining surface observations with deep geophysical and geochemical probing to get to the root of the processes that have shaped the tectonic developments in these two regions of Europe. A key component in the programme, claims Zeyen, is East-West collaboration.

Plate tectonics hold the key to the development of natural resources such as oil, gas and minerals.

"When *Europrobe* was originally conceived in the 1980s the borders between the East and West were effectively closed," he says. "Now we can go to former eastern bloc countries and compare their mountain ranges with those of western Europe. This type of first-hand experience is essential for understanding the forces that are at work. The involvement of Russian scientists is equally important. They are very good theoreticians, a skill that has partly been lost in the West due to the use of computers."

A number of important research findings have vindicated this approach. One of *Europrobe's* 10 projects, for instance, has revealed that the Uralides mountain range has a thick ancient crust which hasn't collapsed, unlike equivalent ranges in the West. "This finding has changed earth scientists' views and initiated a new discussion about the conditions that could have led to this situation. One possible reason for the stability of the Uralides range is that it lies between two old and cold continents and didn't have the opportunity to flow apart.

"Another explanation is that the rocks in the Uralides were too cold and strong to collapse. In Western Europe, the tectonic plates that collided were hotter and softer."

Another project, 'Eurobridge', has thrown up an equally intriguing result. It has discovered that the eastern European shield, which runs from Scandinavia through to Lithuania and the Ukraine, is not a homogenous block as previously thought. Instead, it is made up of a complex mosaic of different continents. "This indicates that plate tectonics started a lot earlier in the Earth's history than many people thought and that they may have played a vital role in the development of life," says Zeyen.

Plate tectonics also hold the key to the development of natural resources such as oil, gas and minerals. *Europrobe's* investigation of the Kimberlite region between Finland and Siberia, for instance, has stimulated considerable interest from industries interested in extracting diamonds. "Every several hundred million years, unusual volcanism brings up new diamonds in this region." Further North, in the Barents and Kara Seas, another area being studied by *Europrobe*, there's equally strong interest from the commercial sector in the prospect of finding oil. "It's a two-way relationship," says Zeyen. "We help industry but, in return, they give us access to their confidential data on these regions."

For programme details, see page 51

Exploring new frontiers

Exploratory workshops, which are designed to identify opportunities for cutting edge research, have indicated several new areas that might be worth investigating in greater depth through ESF research programmes.

One of the workshops considered the possibility of establishing an interdisciplinary programme on nitrogen-fixing cyanobacteria, organisms that play a pivotal role in the global nitrogen cycle and in current attempts to fix nitrogen in economically important crops.

Another investigated the value of bringing together scientists to study the links between mineral deposits and their tectonic settings. "Research into mineral deposits in Europe is less cohesive than in other countries such as Australia, the USA and Canada," claimed a report from the workshop, "not because of a lack of technical capability and expertise" but because industry and academia have not collaborated. "In part this may be due to the fact that a number of major European states are importers of metals and other mineral resources rather than producers and thus less aware of the need for research."

A third workshop looked at how theoretical biology could be enhanced by exchanging expertise from different branches of biology and identifying relevant advances in mathematical theory that have not yet been incorporated into the armoury of theoretical biologists. The fourth workshop centred on molecular physiology.

Decisions about whether any of these four ideas for research should become full-blown programmes will be made in 1997.

Jean-Claude Gall

Fossil insects

Clutches of insect eggs (Monilipartus tenuis) from the Triassic of France

Fossil fuel

A pioneering new network should shed further light on the evolution of species and put an important area of research on a stronger footing.

The ESF's scientific network on *Fossil Insects* will concentrate on establishing a central database that will enable Europe's palaeoentomologists to access and study the vast array of information on fossil insects dispersed across the Continent.

Although insects are the world's most successful organisms, currently accounting for 80% of all animal species, data on the growing number of fossil records in Europe has not been centrally coordinated, leaving many researchers in the dark about the latest developments. If they could access this information more easily, they could gain closer insights into the evolution of insects and other organisms, including flowering plants which often have symbiotic relationships with insects. Fossils also hold valuable information about past climatic changes.

The principal aim of the network, which involves 10 institutions from eight countries, including Russia, is to unite all published information in a data bank, including bibliographies, digitised illustrations and data on the state of preservation of fossils. The network will also encourage palaeoentomologists to describe and classify new species, a badly neglected activity. Other initiatives will include a comparative international study of insects preserved in non-amber localities, another overlooked field in Europe, and research into the dynamics of ancient ecosystems and rates of climatic change drawing on fossil insect data.

For network details, see page 61

Stephen Howell

Arabidopsis thaliana

A new ESF programme aims to exploit recent advances in the gene sequencing of this member of the cabbage family to try to establish why some plants are more successful at adapting to environmental change than others.

Planting new ideas

An ESF research programme is trying to establish why some plants are more successful at adapting to environmental change than others.

The importance of this issue is becoming increasingly acute as global warming and other environmental developments gather pace. Currently, it is estimated that 20% of the world's crops are lost because certain plants are unable to adapt to environmental change.

Although the ESF's new programme on *Plant Adaptation* will focus on the basic science that determines plant evolution, its results could, in the long term, help scientists develop a new generation of plants that will be able to survive droughts, cold snaps and other severe environmental conditions.

Drawing on the skills of molecular and population biologists, the programme's main aim is to look at plants' DNA-level markers to establish the traits that enable them to adapt to particular conditions and how plant populations use these strengths to evolve and flourish.

"While there has been some work on cultivated plants, progress has been slow, because most of them, with the exception of rice, have hugely complex genomes. However, recent advances in the gene sequencing of a very simple plant, called *Arabidopsis thaliana*, which shares a common ancestry with other plants, will enable us to move forward," says Outi Savolainen, the programme's coordinator. "Using the thousands of gene sequences that have been identified in *A. thaliana*, we can study the roles of these genes in plant adaptation. For example, how they affect flower development in the Norway spruce is being investigated by Peter Engstroem at Uppsala University.

> **"No one has ever integrated the skills of molecular and population geneticists on such a large scale before."**

"What makes our programme unique is that it has brought together molecular biologists and evolutionary ecologists from across Europe, all with an interest in the evolution of plant traits from a molecular perspective," says Savolainen. "There are two main advantages to this approach. First, by drawing on the skills of these groups of scientists, it allows us to understand the genetic mechanisms and how an entire population of plants uses these to adapt. Second, it gives us the critical mass to study plants in different conditions, natural and man-made, across Europe. To my knowledge, no one has ever integrated the skills of molecular and population geneticists on such a large scale before. We're bridging the gap between these two disciplines.

"We also place a lot of emphasis on training young scientists through exchanges, including researchers working on their doctorates, not just post-doctoral students."

The programme is focusing on a number of broad themes, including how plants adapt to specific stresses within their own lifetime, for example severe heat and cold, and how they react to long-term climatic changes. It is also looking at the evolutionary forces that maintain the underlying molecular variation needed for plants to respond to environmental change, as well as carrying out comparative studies of genetic evolution.

"All of this information will help us understand the processes and predict what will happen in particular circumstances - data that can, ultimately, be used to breed more adapted plants."

For programme details, see page 51

Lift off

The end of the Cold War is enabling a group of scientists to make a series of revealing discoveries in sub-zero temperatures more than 20 kilometres above the Earth's surface.

Using a former Russian spy plane, an M-55 'Geophysika', researchers in the ESF's *Airborne Polar Experiment* have made their first six flights high above the Norwegian mountains and found a new type of polar stratospheric cloud, a form of cloud that releases ozone-depleting species of chlorine. Their high-altitude experiments, often conducted in temperatures below -80°C, have also unearthed an unexpectedly low number of aerosol droplets, although the precise implication of this unusual finding is still unclear.

For programme details, see page 50

Physical and engineering sciences

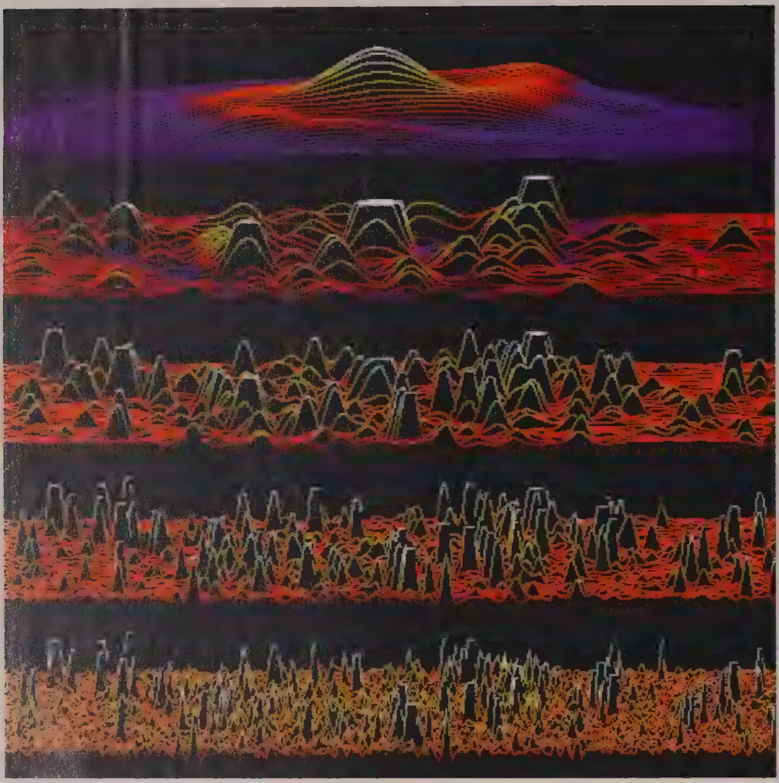
Trying to strike a balance between the so-called 'top-down' and 'bottom-up' approaches to basic science has been a recurring theme over recent years not just in the physical and engineering sciences but across all branches of science. In 1996, we introduced a new mechanism which I believe satisfies both sides of the debate while ensuring the quality of the research itself.

Our strategy is to introduce a two-stage process for initiating new ESF scientific programmes. Initially, we will issue calls for high-quality outline proposals, providing room for innovative research ideas, with European-added value, to rise from the 'bottom'. These proposals, once vetted by the ESF to ensure they meet basic criteria, are then circulated to our Member Organisations for their comments and priorities. The first call has already produced an outstanding response.

Although no programmes have yet been commissioned from this call, we did recommend to the Executive Council two new programmes for launching during 1996 that showed how innovative basic science can contribute to current industrial concerns: *Applied Mathematics for Industrial Flow Problems;* and *Highly Structured Stochastic Systems.*

We also continued to develop ESF's role as the scientific clearing house for large research facilities by assessing the scientific case for a 100 Tesla laboratory and new neutron sources. Currently, no other body in Europe fulfils this role. It is also a role that isn't confined to PESC, although our Committee initiated the idea. Other ESF Standing Committees are now considering other large scale facilities and how existing installations can be used more effectively, notably by widening access to them. The whole subject of large scale facilities is key to the future of basic science and, in the coming year, PESC intends to play an increasingly active role in this field, in addition to championing the causes of the natural and technical sciences that come under its wing.

Professor Jens-Erik Fenstad
Chairman of the Standing Committee for the Physical and Engineering Sciences (PESC)



J L Starck

Universal vision
A wavelet transform of a galaxy and stars, illustrating varying resolution levels.

Astronomic advance

When the Hubble telescope first started relaying images of distant universes back to Earth there was a stunned silence. The pictures were distorted, indicating a serious flaw in the lens of this multi-million dollar telescope. Fortunately, advanced computational techniques were available to bring them back into focus and fears that Hubble would turn into an expensive white elephant swiftly faded. Now, an ESF network is enabling astronomers across Europe to access a wide range of similar computational techniques, opening up new scientific possibilities.

The ESF's network on *Converging Computing Methodologies in Astronomy* is uniting the diverse computing skills of Europe's astronomers to create a common technological framework that will be open and understandable to all in the field. The need for this has never been greater. Over the last few years, the volume of data flooding in from space stations and the world's observatories has risen exponentially. Without sophisticated computational techniques, it is impossible to cope with this, let alone process, store and analyse the data, which could hold the key to the creation of far-flung universes and life itself. Technological advances are also required for recognising galaxy patterns and for scores of other tasks, from accessing data quickly and easily, to integrating data with different wavelengths to create a complete picture of a particular part of the sky.

In most cases, the technological knowledge to achieve many of these objectives already exists. The difficulty is that it is spread across Europe. "Developing the software isn't the problem, it's more a matter of using existing components to create appropriate techniques," says Fionn Murtagh at the University of Ulster. "Fusing data from different sources is one of the most important challenges."

The network is concentrating on three main issues. One of these is to integrate various methods, such as fuzzy logic, mathematical morphology and multi-resolution techniques, to develop new ways to access information from large image databases. Another goal is to create common standards for capturing, processing, analysing and archiving data, which will make it easier for more scientists to access and manipulate this information. Finally, researchers are looking at methods to integrate data from different wavelengths, such as infra red light and radio waves.

The 100-plus researchers who have been involved in the network have already made considerable progress. One of their achievements has been to devise new techniques to improve the compression rates of images, enabling astronomers to download images via the Internet, for example, far more easily. Indeed, the World Wide Web is one of the network's principal channels for publicising its activities.

Over the last few years, the volume of data flooding in from space stations and the world's observatories has risen exponentially.

"We've also created systems that filter noise from images more effectively which makes it easier for researchers to interpret the data," says Murtagh. The network has also helped establish conventions for electronic publishing and, more recently, started to tackle the problem of accessing classes of images from large databanks, for example images of globular clusters. "The ability to do this is essential for carrying out surveys and for understanding the forces that are at work in the universe."

For network details, see page 62

Larger role for ESF as 'clearing house'

The ESF's commitment to act as a clearing house for large-scale research facilities gathered momentum in 1996 when the Standing Committee for the Physical and Engineering Sciences became increasingly involved in a number of major initiatives in this area.

One of the key events was the creation of a committee to evaluate the scientific case for the proposed establishing of a European laboratory, or network of laboratories, that would have the ability to produce intense magnetic fields of up to 100 Tesla. "High magnetic fields like these are needed to gain a deeper understanding of superconductors, semi-conductors and other materials which are vital for both fundamental science and technological developments," explains Michael Springford at the University of Bristol, chairman of the scientific committee studying the case for a 100 Tesla laboratory.

At the moment, magnetic fields of up to 40 Tesla are achievable, even at the steady state, although with very large energy consumption. The most intense and non-destructive pulsed magnetic fields achieved to date are around 70 Tesla. The 100 Tesla laboratory would develop new pulsed sources and be the first of its kind in Europe. The USA and Japan are already engaged in developing similar laboratories. However, deciding whether to go down this mega-science route isn't a light decision. The idea has already been discussed in Europe for nearly five years and nine panels under the newly formed committee are now deliberating on the value of such intense magnetic fields in different areas of science and technology.

"We are also including the science that can be addressed in very large steady fields of up to 50 Tesla," adds Springford.

A separate team of scientists, coordinated by the ESF, has been weighing up the virtues of continued investments in neutron facilities for structural research. The Foundation recently published a widely-disseminated scientific case study report that presented strong arguments in favour of developing this field. "Neutron scattering techniques remain a vital resource for the structural investigation of condensed matter, including solving structural problems in the technical sciences and in industrial developments," claims the report, *Scientific prospects for neutron scattering with present and future sources*. "Given the enormous impact of new materials in technology, no end to the use of this process can be foreseen.

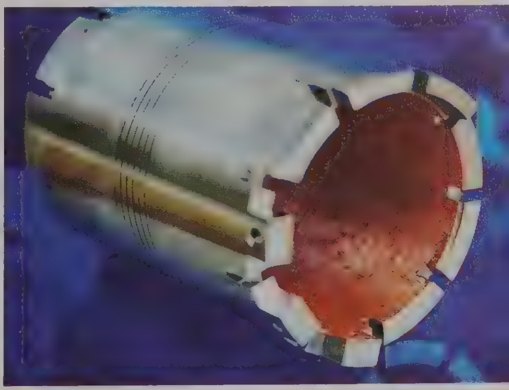
The 100 Tesla laboratory would develop new pulsed sources and be the first of its kind in Europe.

"Neutron scattering techniques will make a special impact on newly emerging interdisciplinary fields as they did, for example, in the elucidation and understanding of the previously unforeseen field of high Tc superconductors. Examples include reproducing extreme conditions of materials important in the earth sciences and (studying) the behaviour of polymer mixtures in flowing reactors in the chemical industry. The need to carry out experiments at central facilities will in itself encourage the interdisciplinary contacts essential to make progress in these fields."

Based on the views and findings of 10 working groups composed of leading European scientists, the 154-page document analysed the scientific future value of neutron scattering from virtually every perspective, from applications in magnetism and superconductivity to structural research in the earth sciences and biology. However, although there was unanimous agreement amongst the working groups that neutron scattering had a potentially vibrant future ahead of it, the report warns that the contribution of this technique to science and industry could be severely constrained by a forthcoming 'neutron drought': "Unless appropriate action is taken, the supply of neutrons is likely to decrease in the next 10 years."

To counter this threat and put neutron techniques on a strong footing, a series of recommendations were made. In the medium term, the working party proposes that greater efforts should be made to exploit the full potential of, and ensure 'quality access' to, existing medium- and high-flux facilities. Further down the line, scientific bodies throughout Europe as well as national agencies should examine the scientific case study performed by the ESF alongside the technical case study supported by the EC for an advanced neutron source which would come into use when existing high-flux sources reach the end of their lifetimes in about 15 years.

More recently, there have been indications that national scientific institutions are increasingly acknowledging the ESF's independent advice at a European level on large research facilities. The Austrian Academy and Minister for Science, for example, have approached the Foundation to assess the case for two proposals for a medium-scale facility in Austria for regional or European use. One proposed facility, AUSTRON, would be a medium-scale pulsed neutron source for multidisciplinary use in fundamental and applied research. The other proposal, EUROCRYST, is for the development of a laboratory for crystal research and synthesis. Detailed evaluations of both proposals are due to be carried out in the near future.



Grenoble High Magnetic Field Laboratory

On target

This SHOTS (Stresses and Heating Optimised Tubular Solenoid) model coil was used to simulate in a steady magnetic field the Lorentz forces of a high field pulsed coil. A real high field pulsed polyhelix magnet will consist of several such coils.

Taming technology

Artificial neural nets and other state-of-the-art techniques that rely on advanced mathematics could remove many of the risks we live with on a daily basis, from erratic driving to the threat of a nuclear melt-down.

Photothèque Pluriel

Controlling complex systems

An ESF scientific programme is studying tools that could be used to improve aircraft's safety-critical systems.

"All physical systems, whether they are cars or industrial plants, depend on control mechanisms to ensure they work correctly but over the last few decades these systems have become increasingly sophisticated, leading to even more complex interactions between their various components," says Chris Harris at the University of Southampton. "Very often the physics involved in these interactions is very difficult to understand. It's rarely a linear cause-and-effect relationship; there are often feedback loops and other complexities. To model and ultimately control and monitor these, you need to use advanced mathematical techniques to prevent undesirable effects."

> "Individual countries in Europe cannot really compete with the frontrunners, the USA and Japan, but as a whole we are amongst the best in the world"

Harris is a member of the ESF's programme on the *Control of Complex Systems* (COSY). Commissioned in 1995, the programme's main aim is to bring together European scientists to study tools that can be used to control complex systems, from safety-critical systems, such as aircraft and nuclear plants, to advanced software programmes.

"In the field of control system research, individual countries in Europe cannot really compete with the frontrunners, the USA and Japan, but as a whole we are amongst the best in the world," says Harris.

One of the key problems being investigated is how to integrate different complex systems, such as optical, electromechanical and software systems. This is a major challenge for a number of industries. "In the aviation industry, for instance, helicopter pilots need to be able to fly in fog. Theoretically, all the technology exists to do this. On-board sensors will tell them whether there are any other aircraft around them and digital look-up tables will explain the terrain. The difficulty is fusing this data, together with the pilot's knowledge, to make the correct decisions. This can be done by developing controller architectures and associated standard methodologies and languages, although further research in this field is required. In fact, it is only a matter of time before the pilot's manipulative functions are taken over by control systems too. A logical extension of this would be to create control systems that take over the function of driving a car, removing the risk of human error."

The programme is also considering ways to deal with non-linear systems. "Industry is increasingly pushing systems to their limits to get the maximum performance from them," says Harris, " but when you do this you can get feedback and other problems. If you point an aircraft's nose too high, for instance, it will stall. Traditionally, researchers have tried to overcome these problems by making non-linear systems linear but this usually leads to a sub-optimal performance. We are trying to produce a theory to treat them as non-linear systems."

Developing control systems that can learn as they go along is another of COSY's goals. This involves a variety of applications, from artificial neural networks that are based on the human brain, to fuzzy logic, a technique that converts general linguistic commands into mathematical statements that systems can understand and act on. The programme is also looking at ways to improve fault diagnosis in safety-critical and high-integrity systems.

For programme details, see page 53

Stochastic systems step forward

A new research programme could provide the tools to help scientists untangle complex genetical relationships, salvage blurred 'noisy' images, or deal with large expert systems, amongst many other uses.

The ESF's new programme on *Highly Structured Stochastic Systems* will unite statisticians and computational scientists from a wide variety of disciplines, including genetics, epidemiology and physics, to create models of large and complex systems. Broadly, this involves using advanced statistical techniques to break these systems down to their key building blocks and identifying the relationships that each of these variables has with its neighbouring variables. In most cases, the principal variable only depends on a few local variables. Once these relatively simple relationships are modelled, it is possible to simulate how the real-life system works by linking these building blocks using graphs or networks of arrows that depict the spatial relationships between variables and using rapidly developing stochastic simulation techniques (Markov Chain Monte Carlo algorithms).

"By reducing complex systems to a collection of simple relationships, it makes them easier to handle computationally," says Sylvia Richardson of INSERM, Paris. "Graphical and hierarchical representations also provide the additional structure needed to overcome some of the limitations of traditional statistical models, in particular the simplifying assumptions that can lead to misleading predictions and underestimate the variability of the conclusion of the analysis."

> **"By reducing complex systems to a collection of simple relationships, it makes them easier to handle computationally"**

The applications for stochastic modelling are far-reaching. For example it can be used to retrieve the true underlying image from a blurred or 'noisy' picture. Alternatively, it can be employed to do efficient computations to help identify which gene is responsible for a particular disease.

One of the main aims of the new programme, which evolved from an earlier ESF network, is to strengthen the potential of stochastic modelling by cross-fertilising expertise and ideas from different disciplines. "Methodologies, such as Markov Chain Monte Carlo (MCMC) techniques, had originally developed largely independently in various branches of physics, genetics and statistics, and clearly it will be fruitful to unify the efforts and build on common ground," says Richardson.

For programme details, see page 54

Light work

A European Research Conference, jointly funded by the ESF and EU, has highlighted the huge potential of quantum optics, a field that involves controlling light at the quantum level. Possible applications discussed at the conference included using light to produce laser-like sources of atoms, coherent X-rays and to cool atoms to nano-Kelvin temperatures.

Researchers also explored how new techniques can be employed to control light patterns in optical storage units, such as compact discs, and to filter out patterns of light from chaotic situations. "Quantum optics is no longer theoretical concepts, it is delivering results across a range of science," says Keith Burnett at the University of Oxford, who organised the conference.

For details of the EURESCO conference scheme, see page 66

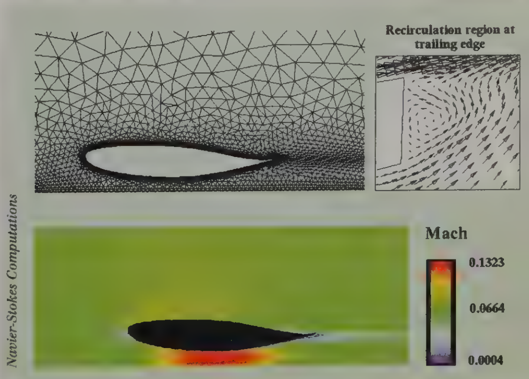
Going with the flow

Difficulties in understanding the mathematical complexities of fluid flows have tended to restrict advances in the aerospace and oil industries as well as many other fields that deal with gases and liquids, including plasma physics and oceanography. However, the advent of more powerful computers has removed this hurdle, spawning a new branch of research, computational fluid dynamics (CFD), and a new ESF scientific programme.

The ESF's programme on *Applied Mathematics for Industrial Flow Problems* will be combining the expertise of academics from nine countries across Europe to improve existing numerical models of fluid flows and develop new models for fluid dynamics, nonlinear analysis and numerical analysis. Subjects covered will range from reactive and turbulent fluid flows to flows in porous media and single and multi-phase flows. More specialised areas will also be addressed including electrochemistry and shape design optimisation in aerodynamics.

"We've deliberately chosen such a comprehensive range of problems because they are all inter-related," says Alfio Quarteroni, coordinator of the programme. "Progress on any one will almost certainly lead to advances in others."

For programme details, see page 53



Optimising aerodynamics

Flow field around the aileron of a Formula 1 racing car.

Humanities

We're increasingly focusing the humanities on thematic issues and problems. There are two main reasons for doing this.

First, it gives us the opportunity to unite the huge range of disciplines that come under the general heading of the humanities. Traditionally, these have been scattered across Europe, often operating in isolation in small research units. By bringing them together to address major issues, we can achieve scientific synergies and exchange ideas which will ultimately lead to richer and more versatile individual disciplines.

Second, we need the combined skills of the humanities not only to tackle scholarly problems of the past but also to tackle the complexities of contemporary problems. There is a growing awareness amongst policy makers that the humanities can shed important light on current issues, especially the cultural diversity that both unites and divides European societies. However, we can only provide new insights into these issues, including the cultural impact of new technologies, if we share our knowledge not just amongst fellow scholars in the humanities but also with other scientific disciplines such as the social sciences. For scientific and economic reasons we have to embrace a new spirit of collaboration.

Professor Wim Blockmans
Chairman of the Standing Committee for the Humanities (SCH)

Asian drive

For decades Asia has lived in shadow of the West but it is rapidly becoming one of the central players in the world, enjoying extraordinary economic growth and increasing cultural influence across the globe. By the turn of the century it is estimated that Asia will account for half of the world's economic growth and that 400 million Asians will have the same purchasing power as the average European.

Despite these developments, European countries have been slow to seize the opportunities. Over the last decade, for example, EU states have been responsible for only 10% of foreign investment in Asia. However, Europe is beginning to wake up to the need to forge closer economic and political ties with this region, reflected in the EU's DGI paper, *Towards a New Asia Strategy*. The main stumbling block is that policy makers and businesses know remarkably little about Asia, especially the cultural differences.

Percy Barnevik, chairman of the EU's Competitiveness Advisory Group, recently summed up the problem when he said: "Asia is still seen as an exotic foreign location by many companies. We have to get

Photothèque Pluriel

Asian growth

By 2000 it's predicted that 400 million Asians will have the same purchasing power as the average European.

out there, get our students there, learn the language."

In fact, there is already a considerable amount of expertise in Asian issues in Europe. An estimated 12,000 academics are involved in related studies. To channel this knowledge into policy and industrial circles, the ESF set up the Asia Committee in 1994. Its main aim is to coordinate multidisciplinary research into Asian issues and bolster this work by establishing closer links with Asian academics.

Thommy Svensson, Chairman of the Asia Committee, believes this initiative will provide important insights into the Asian mind and what makes the region tick. "European policy makers and intellectuals have great difficulty in finding the right paradigms to understand and relate to a new more Asia-centred world," he explains. "In the coming years, a more profound understanding of the underlying philosophical assumptions, the social thinking and the way people rationalise their interests in an increasingly self-assured Asia will be a decisive factor for political and economic success in the international arena. By pooling the expertise of Europe's scholars and working more closely with our counterparts in Asia we can shed light on these issues."

The main stumbling block is that policy makers and businesses know remarkably little about Asia, especially the cultural differences.

An important step in this process will be a strategy paper on research and education in Asia, currently being prepared by the Committee and due to be published in 1997. Primarily aimed at policy makers, but also taking into account academia, notably the humanities and social sciences, the document suggests various ways that relevant knowledge about Asia can be shared and enhanced. "It's not a shopping list of requirements," says Svensson. "Instead, it identifies the main issues that lie at the heart of abstraction and which, in the view of the Committee, are essential for an adequate and relevant knowledge of Asia and, in the long-term, for fruitful Asian-European cooperation."

Although still being finalised the document is likely to concentrate on five key areas. Three of these centre on the academic world. These include increased mobility between European and overseas scholars, not just Asian academics but also Australian and North American scholars. The Committee is also keen to see greater cooperation between European researchers to overcome the fragmented nature of Asian studies in Europe and the divides between disciplines and specialisations, including the classical and modern fields. Closer ties with organisations outside the academic world will also be suggested in order to ensure that scholars' expertise is fed into policy debates. One possibility is the creation of European centres of excellence in Asian studies that can be used by a broad cross-section of non-academic players, from industrialists to educationalists. Finally, channels will need to be created to disseminate knowledge about Asia more effectively. One way to do this, it is argued, is to make Asia a natural part of secondary school curriculums and professional training.

For programme details, see page 55

Artful view of science

Science appears to have gone full circle and returned to its 16th century roots, claims the Chairman of a new ESF network.

Professor William Shea of the Université de Strasbourg is the head of the ESF's network on *Science and the Visual Image*. Commissioned in 1996, the three-year network is investigating how art and science influenced each other between 1500 and 1800, a period when man's view of the world, nature and the universe was radically altered by a succession of scientific discoveries.

> **Science is more dependent on visual imagery than ever.**

"Visual images played a crucial role during this time in acquainting millions of Europeans with the ideas of Galileo, Harvey, Descartes and Newton, to name but a few," says Shea. "During the 16th century, for instance, the publication of anatomical drawings by artists such as Leonardo da Vinci and physicians like Vesalius persuaded people to abandon their view that the human body had some sort of mystical relationship with the stars and plants. The development of scientific icons in alchemy and other fields was another example of how art helped communicate ideas.

"Many scientists at the time, including Galileo, worked closely with artists. They realised that the artist's trained eye saw more than theirs did. When Galileo looked through his telescope at Saturn, for instance, he thought it was surrounded by satellites, not rings.

"By the same token artists were influenced by science. The Impressionists tried to use their understanding of optics to create 'scientific' representations of light. Architects, in turn, have borrowed from mathematics to create new spaces."

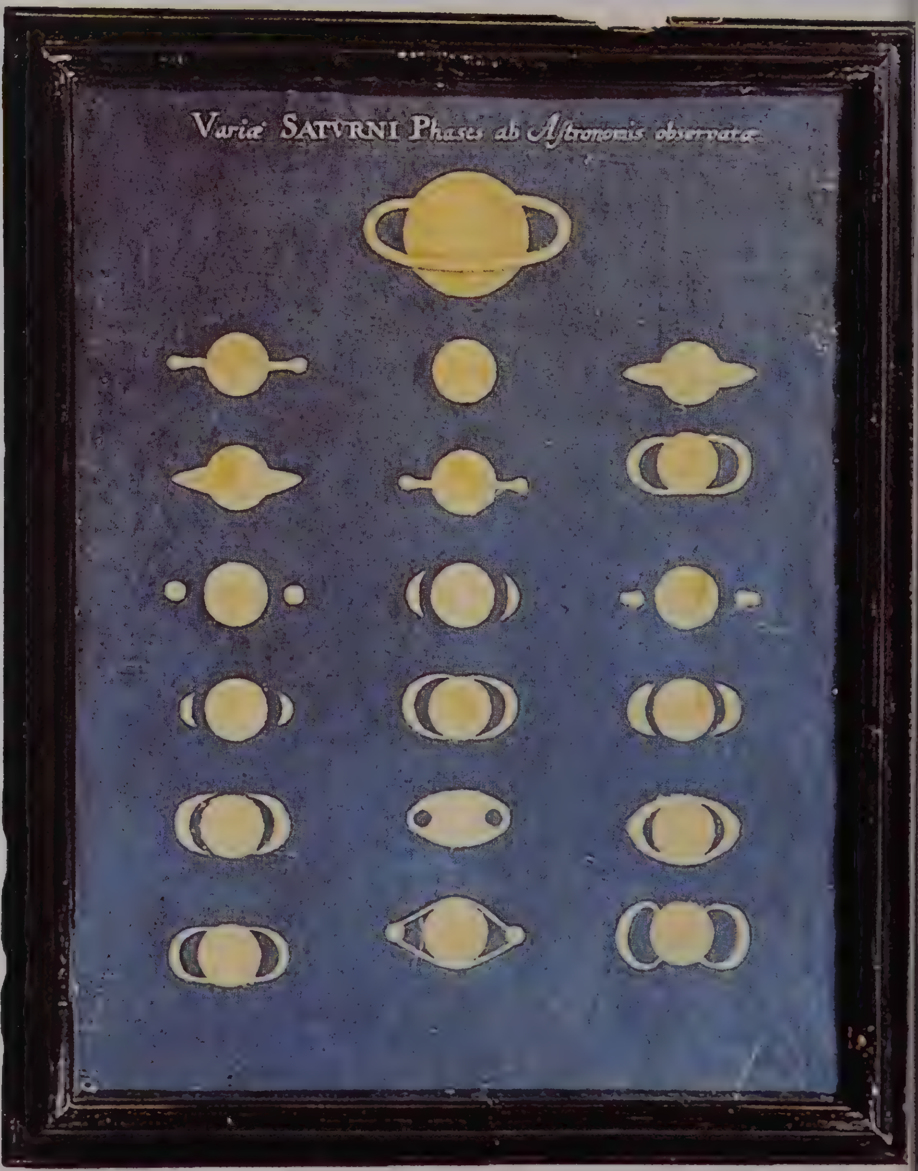
Although the links between artists and scientists have weakened over the last century, science is ironically more dependent on visual imagery than ever before thanks to the graphic capabilities of computers, reminiscent of the early visually-led days of science. "Virtual reality has become the reality in several branches of science. You can now carry out experiments and manipulate proteins using screen-based images without stepping into a laboratory," says Shea.

Over the next three years, the ESF's network on *Science and the Visual Image* will be exploring the inter-relationship between art and science through a series of workshops. The first will look at various techniques used to explain new scientific ideas, including the introduction of perspective, the development of anamorphosis, woodcuts and engraving methods. The invention of microscopes, terrestrial globes and other instruments will also be discussed. The second workshop will look at how artists turned to science and new industrial advances for inspiration. The final workshop, before a concluding conference in 1999, will study how medical advances, allied with the artists' skills, helped to create the modern image of the ideal person.

For network details, see page 63

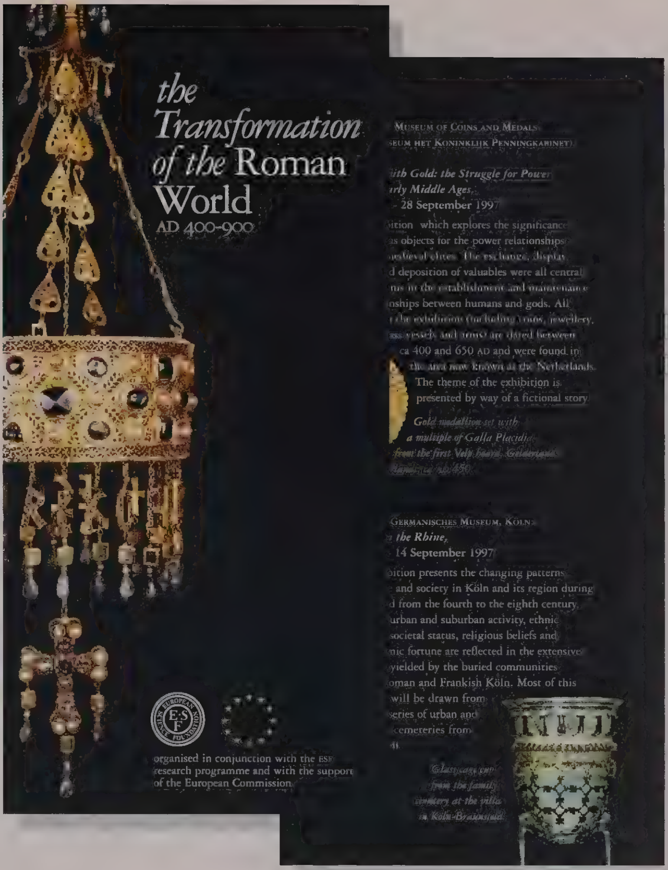
Planetary puzzle

Illustrations of telescopic observations of Saturn between 1610 and 1655 by Maria Clara Eimmart (1676-1707) show attempts to understand the bizarre appearance of what was eventually discovered to be a ring around Saturn.


Variæ SATVRNI Phases ab Astronomis observatæ

Transforming perceptions of the post-Roman world

Post-Roman history might not rank alongside the cinema and football as one of the most popular public pursuits but an ESF research programme has found an innovative way to bring insights from this period to a wider audience.



the Transformation of the Roman World
AD 400-900

organised in conjunction with the ESF research programme and with the support of the European Commission

Museum of Coins and Medals
seum het Koninklijk Penningkabinet)

ith Gold: the Struggle for Power
rly Middle Ages,
- 28 September 1997

ition which explores the significance
as objects for the power relationships
mediaeval elites. The exchange, display
d deposition of valuables were all central
ms in the establishment and maintenance
onships between humans and gods. All
the exhibition (including coins, jewellery,
ss vessels and arms) are dated between
ca 400 and 650 AD and were found in
the area now known as the Netherlands.
The theme of the exhibition is
presented by way of a fictional story.

Gold medallion set with
a multiple of Galla Placidia
from the first Velp hoard, Gelderland

Germanisches Museum, Köln
the Rhine,
14 September 1997

ition presents the changing patterns
and society in Köln and its region during
d from the fourth to the eighth century.
urban and suburban activity, ethnic
societal status, religious beliefs and
mic fortune are reflected in the extensive
yielded by the buried communities
oman and Frankish Köln. Most of this
will be drawn from
series of urban and
cemeteries from

Glass cage cup
from the family
cemetery at the villa
in Köln-Braunsfeld

Crowning achievement

An interlinked series of museum exhibitions is presenting the findings of the ESF's Transformation of the Roman World programme.

At the beginning of 1997, an interlinked series of exhibitions covering the work of the ESF's *Transformation of the Roman World* research programme opened at five museums across Europe. Using state-of-the-art techniques, including multi-media, the exhibitions trace some of the most pivotal developments between AD400 and 900 that laid the foundations for modern Europe.

"It was a period of immense change, spanning late antiquity to the early medieval state," says Leslie Webster at the British Museum, which is hosting one of the exhibitions. "It was the beginning of the transformation of Europe into the pattern that we see today.

> **"To my knowledge, no one has ever done an interlinked series of exhibitions across Europe before."**

"The aim of the exhibitions is to bring the results of our research programme to a wider public using new techniques, such as interactive media, that allow people to enter a wider discussion about this period. The exhibitions aren't meant to be blockbusters but they have been very well attended so far. To my knowledge, no one has ever done an interlinked series of exhibitions across Europe before. It's a good example of European cooperation."

Each of the five exhibitions covers a different facet of the transformation of the Roman world. The British Museum, for instance, deals with the immediate aftermath of the Roman empire and how its legacies were integrated into British society after the 5th century. At the Museum of Byzantine Culture in Greece, they are using painted barrel-vaulted tombs and other ancient burial materials to bring to life the transition to Christianity, while the Koninklijk Penningkabinet in Holland is concentrating on the wealthy lifestyles of the new elite. To complement these displays, there are catalogues and plans to put the information on the Internet.

The exhibitions represent a fitting climax to the five-year *Transformation of the Roman World* programme, which finishes in 1997. "During the programme we've made considerable advances in changing scholars' perspectives of this period, largely by bringing together academics from different countries, traditions and subject areas," says Ian Wood at the University of Leeds, one of the coordinators of the programme. "For example, we've found that the old debate about the North versus the Mediterranean is only one part of a much larger world of change which includes eastern Europe. There's also been a radical new debate about how the Romans resettled the Barbarians and the treaties they employed. The question of ethnicity has been another fruitful avenue of discussion and shed light on how it is used to create national pasts, as it is being used today in the Balkans.

"More than anything, the programme has been massively important in raising awareness about the contributions that different disciplines can make to this field and in bringing various national scholarly traditions up to the same level."

For programme details, see page 56

Republicanism revisited

The historical study of republicanism has been dominated by an Atlantic vista, emphasising the drive toward liberty, the rule of law and greater civic vigilance in America and Britain. However, the first two workshops of a new ESF network have highlighted the contributions that other regions and countries have made to republicanism as a shared European heritage.

“Previously, European academics have concentrated on republicanism either in particular countries or specific periods, such as the Renaissance. By bringing them together through our network, *Republicanism: a shared European heritage*, we are acquiring a much fuller picture of the rich variety and evolution of republicanism as a political culture and a political theory,” says Professor Martin van Gelderen at the University of Sussex, the secretary of the network’s coordination committee.

“In particular, it’s drawn attention to significant developments in previously overlooked countries such as Germany, the Netherlands, Poland and Switzerland. These countries need to be studied more closely. We also need to look at Italian republicanism beyond the Renaissance.”

Over the next two years, the network will be investigating three broad themes. The first topic is the linkage between constitutions, constitutionalism and republicanism between 1500 and 1800. In this context, the network will not only pay attention to the European republics, but also to the constitutional traditions in Belgium and Spain. “We’ll also be analysing the political culture of republicanism, *les mœurs républicaines*. What sort of institutions, virtues and people do you need to make liberty, the rule of law and political participation thrive?,” says van Gelderen. “Here, we’ll place particular emphasis on citizenship and the role of women in the theory and practice of republicanism.”

The network has drawn attention to significant developments in previously overlooked countries such as Germany, the Netherlands, Poland and Switzerland.

Van Gelderen and his team will also study the relevance of the republican tradition for the future European Union. In a special workshop in Siena the network will draw upon the intellectual resources of republicanism to discuss contemporary problems of democracy in Europe, such as the linkage between the citizens and institutions in the European Union, the political culture of the Union and the relevance of republicanism for the new democracies in central and eastern Europe.

For network details, see page 63

Humanities reveal their contemporary relevance

Researchers in a wide-ranging ESF programme on the *Individual and Society in the Mediterranean Muslim World* are underlining the increasing ability of the humanities to tackle contemporary issues.

One of the programme’s seven working groups, led by Felice Dassetto of the University of Louvain, will be investigating how Muslims manage the tensions of living in contemporary Europe where a ‘peripheral’ Islam is in the process of anchoring itself, and defining its connections with other Islamic territories.

The working group will address two key themes. First the current contemporary discourse, in print, on video and radio, used by different Islamic actors will be examined in order to analyse the variety of ways of understanding what it is to be Muslim in a contemporary society not only in Europe, but also in the wider Mediterranean Muslim world or beyond. Second, researchers will study the practices which European Islam carries out in order to ‘re-Islamise’ or re-socialise individuals. These include both socialisation practices, such as Koranic schools, ‘Muslim’ sports clubs or scout groups, as well as more traditional ritual practices, like prayer, Aïd, Ramadam and pilgrimage.

The researchers, from disciplines ranging from history to anthropology, will investigate these issues in depth in September 1997. Other themes being addressed by the programme over the course of the next three years range from religious activity and experience to how economic cycles and different modes of production define individuals in Muslim societies.

For programme details, see page 56

Social sciences

Europe is a natural laboratory for social science research. There is a great variety of institutional arrangements in European countries, for example in social security, education and health care provision. This variation gives social scientists the opportunity to ascertain the effects of social, economic and political institutions on social structure, economic performance and, generally, citizens' lives. To catch this opportunity we need comparative research, which is best conducted through the collaboration of researchers from different European countries.

Through comparative research and collaboration we can develop and test theories of human action and societal processes. This, in turn, will help us generate instruments for understanding how European society is evolving and adapting to change and provide a better base for social and political action to improve the conditions of citizens all over Europe.

Unfortunately, the social sciences, like other scientific areas, are experiencing budget cuts in many European countries. In this situation, it is crucial to keep a balance between providing necessary support for established structures and making funds available for new initiatives.

The Standing Committee for the Social Sciences (SCSS) can play a key role in ensuring that alleys are kept open for research activities which hold the potential for moving social sciences ahead. This applies both on the European level, with the SCSS initiative to prepare a blueprint for a European Social Survey, and on the national level where Member Organisations may need the support of SCSS to keep a budget for investment in new ideas. SCSS, together with its Member Organisations, has therefore a very important role to play, at times of financial constraints, in sustaining and improving the prerequisites of European social scientists, for them to produce research of the highest quality.

■

Professor Robert Erikson
Chairman of the Standing Committee for the Social Sciences (SCSS)

On the road to transatlantic collaboration

Efforts to deal with the world's mounting transport problems have tended to concentrate on technological solutions, such as high-speed rail links and the EU's 'car of the future' initiative. However, collaboration between social scientists in Europe and the USA is helping to steer the debate back towards longer term strategic considerations and attracting considerable interest from policy makers in both regions.

"Over the last few years, the ESF has been bringing European researchers together to think about transport in the light of changing social and political circumstances in Europe, not just the physics of transport," says Professor Peter Nijkamp. "We've taken a more strategic view. Our aim has been to find ways to create sustainable transport solutions that take into account changing lifestyles, institutional factors and Europe's desire for greater social cohesion. American researchers, who've focused on engineering and marketing strategies to redress transport imbalances, have been very interested in our approach. By combining our skills with theirs, we can make considerable headway, learning from each other.

"Transatlantic cooperation makes a lot of sense in this field. Many of the research issues and transport developments in Europe and the US are the same. For example, both are experiencing rapid rises in aviation due to deregulation, as well as significant increases in freight traffic. There's also much greater integration in the transatlantic markets."

To capitalise on the potential synergies between US and European researchers, the ESF and the US National Science Federation (NSF) held an exploratory workshop on transport research in the US in 1996. Position papers from the two camps formed the starting point for the meeting and revealed a considerable amount of agreement between Europe and the US on the forces likely to shape transport and mobility in the next century. The European paper emphasised the opportunities that could stem from greater European integration, including the Single Market concept and the opening of eastern Europe, as well as the beneficial applications of new technology, such as advanced telecommunications. It also highlighted possible negative side-effects of these developments, such as spatial discrimination and environmental risks. The US paper echoed the concerns of European researchers when it concluded that current transport trends were unsustainable. Both groups agreed that sustainable transport should be the guiding principle for future research. There was also a broad consensus that socioeconomic forces influencing transport patterns, notably new ways of living and working, needed to be studied in greater depth.

Another area urgently requiring further research, claimed the workshop, was the question of how to finance future transport initiatives. This problem is becoming increasingly acute as transport becomes less of a 'free' public good. To establish equitable pricing or tax-related solutions, more sophisticated techniques will be needed to integrate externalities, such as environmental impacts, into transport costs.

Sustainable transport should be the guiding principle for future research.

'Transatlantic' agreement was reached on several other issues. Overall, the workshop identified five key areas where European and American researchers could productively pool their respective skills. These included social change and transport; sustainable transport; globalisation and transport; information technology and its impacts; and the role of institutions.

"In the near future, we hope to agree a collaborative research initiative covering some of these issues," says Nijkamp. American and EU policymakers would probably welcome this type of development too. When senior officials from America's Department of Transport and the EU attended a subsequent ESF-NSF workshop on transport in Strasbourg they not only admitted that this type of collaboration was extremely fruitful ("One of the best discussions I've attended," said the EU representative) but that the researchers' views would be fed into policy debates.

J H Smith

Bridging the Atlantic *European and American social scientists are planning to join forces and take a more strategic approach to creating sustainable transport systems.*

Photothèque Pluriel

Apprentices for unemployment?
Levels of youth unemployment in Europe are as high as 20% to 30%.

Youthful network comes of age

Countries throughout Europe are recording disturbing levels of youth unemployment, often as high as 20% to 30%. To compound the problem, many of these people face prolonged periods without work even though a significant proportion are well-qualified relative to their older peers who have managed to enjoy relatively stable periods of employment. Getting to the root of the problem, let alone finding solutions, is not an easy task, but the ESF's network on *Transitions in Youth* has helped academics get closer to the answers.

For the last three years the network has been linking together educationalists, psychologists and a wide variety of other disciplines from across Europe to promote comparative research on the transitions that young people encounter. In particular, the researchers have been concentrating on the transition from education to the labour market.

It is a complex subject, as David Raffe, the network's coordinator at the University of Edinburgh, explains: "These types of transitions are less tidy and clear-cut than they used to be. In the past, young people could fairly confidently expect to go from school or university straight into a relatively stable job and steadily work their way up the ladder. Today, they tend to move between education, unemployment, temporary work and regular employment. One of the puzzling developments is that qualifications do not necessarily increase their value in the labour market."

Understanding conundrums like these isn't helped by difficulties of comparing data across countries. "One of our main aims is to create and analyse cross-national longitudinal datasets," says Raffe. "During the course of the network we've learned a lot about the problems of doing this. For example, different countries define education differently which makes it difficult to weld together the data. Some countries concentrate on specific courses or age groups, others only include full-time education but not apprenticeships."

> **"One of the puzzling developments is that qualifications do not necessarily increase their value in the labour market."**

Despite these hurdles, the network has made considerable progress in addressing these methodological issues. It has also enabled participating researchers to obtain additional funding from sources other than the ESF, such as the EC's programme for vocational training. More significantly, although the network has come to the end of its ESF funding, it intends to carry on its work, highlighting the ability of the ESF to act as a catalyst for longer term initiatives. "We now have the momentum to move forward and expect to continue on a self-funded basis," says Raffe.

For network details, see page 64

Smart move

Cognitive and computer scientists together with educationalists and sociologists have been joining forces to increase understanding of how we learn, and to devise smarter expert systems and more effective tools for long-distance learning.

Medical advances
New learning systems could help medical students more easily to translate their theoretical knowledge into practice.

"The idea is that computer scientists are able to learn and apply psychologists' models for thinking and learning processes, while the psychologists can bring their models to life by collaborating with the computer scientists," says Professor Hans Spada, co-chairperson of the three-year-old ESF programme on *Learning in Humans and Machines*.

"There are several applications for this multidisciplinary approach. One of these is to develop expert systems that mirror more accurately the way we think. Another is to create tutorial systems that are based on the knowledge of human tutors and which have the capability to support learning in cooperating groups of scientists. This is becoming a hot issue as distributed learning systems become more commonplace."

The programme has also been investigating the interaction between types of knowledge. "Medical students, for example, spend several years learning theory and then enter a clinical phase when they have to translate their theoretical knowledge into practice. We've made considerable progress in understanding the interactions involved in this process which could help us develop suitable learning arrangements to make the transition easier for people like this," says Spada.

Another major achievement of the programme is that it has created a network of scientists who have managed to attract additional sources of funding outside the ESF, ensuring that "the network will last longer than the programme."

For programme details, see page 57

New territories for social science research

Social science has come to the forefront and become a respected research partner in its own right, but it now has to prove that it can contribute to the major issues being addressed by other branches of the scientific community, including genetics and the digital society, claims Guido Martinotti, the former chairman of the SCSS.

Professor Martinotti retired as chairman in 1996 after five years in the post. Over that time he played a key role in enhancing the stature of the social sciences on the European stage. "One of the most important developments over the last few years has been the growth in awareness of the value of social science research, especially amongst policy makers in DGXII and the Commission as a whole," he says. "For instance, we now have a targeted socio-economic component in the Fourth Framework Programme. The ESF can't claim all the responsibility for this but we have undoubtedly been a major reference point for the Commission and for the social science community as a whole."

Martinotti believes that the change in attitude to the social sciences reflects a broader shift in scientific research. "There's been a growing realisation in the scientific community that we have to respond to social needs. We've moved away from 'science-driven' research to 'society-driven' research."

One of the main reasons for this, he says, is that Europe's social and economic landscape has altered dramatically over the last few decades. "There's been a gigantic demographic transition in Europe. People are now living much longer and their lifestyles and work patterns are being radically altered by new technology and the settlement patterns connected with it. These developments have huge social and economic implications which we need to understand if we are to help policy makers make informed decisions.

"Production systems have also changed. Heavy manufacturing is no longer the bedrock of European economies. Instead, we are increasingly relying on highly interactive networks of small service-based companies which presents organisational issues.

"All of these issues fall into the territory of social science research and cannot be understood without the tools of social scientists."

Nevertheless, Martinotti appreciates that social scientists cannot deal with these challenges on their own. "The transitions that Europe is experiencing are highly complex and demand the combined skills of all the scientific disciplines. The advent of the Information Society, for instance, has technological, cultural, social, economic, environmental and even medical implications. Very often it is difficult to draw the line between different disciplines when you are attempting to model these systems. You have to take a multidisciplinary approach."

During his tenure as chairman of the SCSS, Martinotti actively forged closer ties with other disciplinary groups, notably by collaborating with the ESF's other Standing Committees. Multidisciplinary initiatives included a joint project on the media with the Humanities Standing Committee as well as a major research programme on the *Environment and Health* with the EMRC.

He also strengthened the ESF's links with non-European organisations, especially America's National Science Foundation. The SCSS is now one of the few bodies in Europe with a representative from the NSF in its Committee. "For instance, in addition to traditional partnerships with the US Social Science Research Council, our transport research has stimulated a considerable amount of interest in the NSF, which is indicative of the quality of our work. Indeed, one of our networks, NECTAR, helped create one of the most respected communities of transport researchers in Europe and this group is still active even after ESF funding for the network has been completed. GISDATA and a new group on economic modelling are other examples.

"The challenge that social science researchers will face in the coming years", says Martinotti, "is to work with other disciplines to understand the social and economic implications of developments in the so-called 'hard' sciences, including unleashing the potential of the living cell and the creation of the digital society."

Guido Martinotti
During his time as SCSS Chairman, Professor Martinotti strengthened the ESF's links with non-European organisations.

Risk review

A recent workshop involving researchers from the ESF's *Tackling Environmental Resource Management* (TERM) programme could help scientists manage public perceptions of risk more effectively.

"It's widely recognised that public reactions to risks often bear little relation to the true threat," says Paul Koutstaal, TERM's coordinator. "In many cases, they exaggerate the risks but there are also instances where they underestimate them. For example, people living in regions where there is a high likelihood of suffering an earthquake or a volcanic eruption tend to underplay the risks by thinking positively and using other coping mechanisms including investing their trust in some form of mythical providence.

"The aim of the workshop was to get together researchers from around Europe to analyse public perceptions of risks and how these threats are communicated and interpreted by society. If we can understand these mechanisms more fully, we will be in a stronger position to communicate the true risks that people face from particular developments.

"There's been quite a lot of research in this field but it's tended to be at a national level. The workshop gave us the opportunity to discuss different responses to risk across Europe. Pan-European cooperation is especially important here as environmental threats, notably pollution, tend not to respect national boundaries."

In addition to risk perception, TERM is looking at a broad range of other subjects including environmental management in firms, international cooperation on pollution control and the dynamics of consumption and production processes.

For programme details, see page 57

Blueprint for major survey takes shape

The possibility of a new database that would enable social scientists to compare social and political attitudes across Europe has moved a step closer to becoming a reality.

During 1996, an ESF expert group recommended that a blueprint for a *European Social Survey* (ESS) should be drawn up. The broad aim of the survey, which was discussed in detail in last year's annual report, would be to provide like-for-like data on social and political attitudes across Europe.

The expert group, which was chaired by Professor Max Kaase (WZB, Berlin), envisaged that the new survey would provide systematic and regular data on topics of major interest to both social scientists and policy makers. It would complement, rather than duplicate or compete with, existing data collections from other sources such as national bureaux or the European Bureau of Census (Eurostat). To establish a suitable blueprint, the group identified five key issues that need to be taken into account in its development:

- *Research focus*: the general theme of the survey should be 'Monitoring the Political and Social Beliefs of Europeans'. Specific topics suggested include social inequality, values, national identity, quality of life, political and economic orientations, 'Europeanisation' and mass media behaviour.
- *Comparative and complementary data*: the ESS should provide comparative data that complements existing data collections carried out at a national and European level. It should also be academically innovative through a theory-guided combination of macro and micro data.
- *Probability sampling*: potential respondents should be chosen on the basis of probability sampling. The populations chosen should include individuals of a particular age resident in a given country, in private households,

at a given point of time. Bearing in mind operational and financial costs, biannual surveys should be conducted.

- *Steering and managing the survey*: separate committees should be established to look at the content of the survey and its methodology.
- *Funding*: the 'blueprint' for the new survey will be presented to both national research councils and the relevant European Commission bodies with the aim of obtaining funding for at least the trial period. The ESF Standing Committee for the Social Sciences will argue that such a *European Social Survey* is an essential "large-scale facility" for European comparative social science research which could be accessed through the existing data archives network.

With the participation of academic survey experts from 18 European countries, work is now underway to complete the *European Social Survey* blueprint by summer 1998.

For blueprint details, see page 56

Understanding European social and political attitudes

A European Social Survey is an essential large-scale facility for comparative social science research

The virtues of diversity

Debates about European integration have tended to be dominated by the assumption that pressures from global markets are forcing firms to adopt similar operational and organisational structures but an ESF programme suggests that this is not only unlikely to occur but also undesirable.

For the last three years, the Foundation's programme on *European Management and Organisations in Transition* (EMOT), led by Richard Whitley of the Manchester Business School and Anna Grandori of Bocconi University, has brought together hundreds of social scientists from 12 European countries in 20 workshops focused on the conditions underlying the problem of differentiation and integration of economic actors. Two broad themes have emerged from these workshops.

First, different national and local systems of economic action persist in Europe. In contrast to the conventional wisdom that such differentiation is outmoded and an impediment to the competitiveness of European firms and the economy, the EMOT workshops have highlighted the many ways that such differences appear to be prerequisites for both innovation and learning - two components expected to be essential for future competitiveness.

Secondly, however, one condition for such positive outcomes to emerge is the effective integration of the multitude of organisational models and solutions. The series of workshops identified many integration mechanisms (for example, interfirm networks of various kinds, multinational corporations, joint ventures, and various forms of relational contracting) and developed guidelines for their comparative and dynamic assessment.

"The challenge is to integrate while preserving the differentiation that may turn out to be Europe's secret competitive weapon," says Bryan Mundell at Bocconi University, the programme's research coordinator.

For programme details, see page 57

Operational activities

The following pages give details of the ESF's operational activities in 1996 including a brief description of how the Foundation works, Committee and Board reports, a comprehensive listing and contacts for our scientific activities, and the year's financial statements.

Contents

- *How the ESF works* 42
- *Committee and board reports* 43
  - *Standing committee reports* 43
  - *The European Medical Research Councils (EMRC)* 43
  - *Standing Committee for Life and Environmental Sciences (LESC)* 43
  - *Standing Committee for Physical and Engineering Sciences (PESC)* 44
  - *Standing Committee for the Humanities (SCH)* 45
  - *Standing Committee for the Social Sciences (SCSS)* 45
  - *Conference and network committee reports* 46
  - *European Research Conferences (EURESCO)* 46
  - *Network Committee* 46
  - *Associated board and committee reports* 46
  - *European Boards for Marine and Polar Science (EMaPS-Boards)* 46
  - *Committee on Radio Astronomy Frequencies (CRAF)* 47
  - *European Space Science Committee (ESSC)* 47
  - *Nuclear Physics European Collaboration Committee (NuPECC)* 47
- *Scientific programmes* 48
  - *Medical sciences* 48
  - *Life and environmental sciences* 50
  - *Physical and engineering sciences* 53
  - *Humanities* 55
  - *Social sciences* 56
  - *Scientific programmes at a glance* 58
- *Scientific networks* 60
  - *Medical sciences* 60
  - *Life and environmental sciences* 61
  - *Physical and engineering sciences* 62
  - *Humanities* 63
  - *Social sciences* 63
  - *Exploratory grants in the social sciences* 64
  - *Scientific networks at a glance* 65
- *European research conferences (EURESCO)* 66
- *Publications* 68
- *Organisational structure* 70
- *Board, executive council and committee membership* 71
- *ESF associated board and committee membership* 74
- *Member organisations* 76
- *Finance and accounts* 78

How the ESF works

The ESF's main decision-making forum is its General Assembly which brings together senior representatives of all of the Foundation's Member Organisations at an annual meeting in November in Strasbourg.

Implementation of the Assembly's decisions is overseen by the Foundation's Executive Council which meets three times a year. It approves the setting up of new activities, prepares the work of the next Assembly and ensures effective communication with Member Organisations and other relevant institutions. Along with the ESF President and Vice-Presidents, the Executive Council is made up of at least one elected member from each country with Member Organisations and from a balanced range of disciplines. Since 1994, it has been helped in its work by two new ad-hoc committees on Membership and Finance.

Ensuring continuity of ESF business between meetings of the Executive Council is the responsibility of the Board. It is constituted by the President, Vice-Presidents, up to five members elected from the Executive Council, and the Secretary General.

In addition, the ESF's ability to run a wide range of activities from organising exploratory workshops to providing science policy advice is crucially dependent on the contribution of its various committees and boards.

Its five Standing Committees (medical sciences, life and environmental sciences, physical and engineering sciences, humanities and social sciences) are made up of leading scientists and representatives from the Foundation's Member Organisations and are responsible for identifying scientific priorities, formulating strategies, developing research agendas and recommending new research programmes to be launched.

The Foundation's networks and European Research Conferences are overseen by separate steering committees reporting to the Executive Council and a number of other committees and boards have been set up in scientific areas requiring specific attention.

The day-to-day running of the Foundation's business is taken care of by the ESF office, directed by the Secretary General, based in Strasbourg.

Assembly, Executive Council and Board meetings 1996

JANUARY	25 26	Board + Standing Committee Chairmen
FEBRUARY		
MARCH	29	Board
APRIL	2	Board + Standing Committee Chairmen
MAY	20	Board
	21 22	Executive Council
JUNE		
JULY	12	Board
AUGUST		
SEPTEMBER	25	Board
	26 27	Executive Council
OCTOBER		
NOVEMBER	20	Board
	21	Executive Council
	21 22	Assembly

Committee and board reports

Standing committee reports

The European Medical Research Councils (EMRC)

Scientific activities
The EMRC's portfolio of research activities was enhanced with the decision to approve a programme on the *Immunogenetics of Allergy*, following a successful network on this subject. The programme has three main aims: to identify the genes controlling atopy; to establish more clearly the factors responsible for directing immune responses in allergy; and to delineate the interplay between genotype, physiological and environmental factors. These insights could play a pivotal role in developing more effective therapies for allergies. In a similar vein, EMRC formally approved its *Environment and Health* programme. Overall, EMRC coordinated five programmes and three networks during the year. The Committee also held a workshop on the comparative epidemiology of transmissible spongiform encephalopathies just two and a half months after the discovery of the new variant of Creutzfeldt Jakob Disease.

Strategic activities
During the year, the EMRC implemented a new strategic approach which takes account of the variety of sources of funding available across Europe. Rather than following specific activities for long periods of time, the Committee is placing emphasis on its ability to pursue new avenues of research at a higher speed than is often possible through other European channels. The Committee's integrated strategy aims to make full use of the ESF's various instruments such as exploratory workshops, networks and *à la carte* programmes in order to improve access to other European funds.

In 1996, this new approach led to the setting up of an EMRC exploratory workshop scheme. Out of 22 proposals, five were funded, including one on *Multiple Primary Tumours in Oral Cancer* and another on *Pulsed Brachytherapy*. In addition, a *European Medical Research* newsletter was launched to draw attention to the range of ESF tools available to the biomedical community.

Collaborating with other bodies
Various initiatives were conducted in collaboration with other bodies. The *Environment and Health* programme, for instance, involves three other ESF Standing Committees (LESC, PESC, SCSS), the European Commission and the World Health Organisation. An EMRC symposium on 'The roles and responsibilities of public and private sector bodies in funding medical research' also involved past and present heads of the Volkswagen Stiftung and the Wellcome Trust. In addition, an EMRC representative forwarded ESF inputs to the Convention of Human Rights in Biomedicine, which was developed by the Council of Europe.

Committee chairmanship
Professor Philippe Lazar stepped down as chairman of EMRC at the ESF's General Assembly in November 1996. He has been succeeded by Professor Leena Peltonen, Professor of Medical Genetics at the University of Helsinki.

Standing Committee for Life and Environmental Sciences (LESC)

Scientific activities
In its first full year as a separate Committee, LESC agreed to support a research programme on *Plant Adaptation*. Drawing on the expertise of leading scientists, the programme will focus on plants' abilities to adapt to environmental change. According to recent estimates, 20% of crops fail due to plants' inabilities to cope with these types of changes. The Committee also

supported the launch of a new scientific network on *Fossil Insects* and reviewed five completed networks: *Dynamics of Complex Systems in Biosciences; Advanced Study Workshops on Mediterranean Marine Geosciences; Whole Plant Physiology; Molecular Dynamics of Biomembranes; Impact Cratering.* In total, LESC was involved in nearly 20 programmes and seven networks in 1996.

Strategic activities

Considerable time and effort was spent formulating the life and environmental sciences' contribution to the ESF's proposal for the next Framework Programme. This process highlighted a number of themes that the Committee believes could be worth pursuing in more detail, notably 'Beyond sequencing'; 'Natural hazards, trends and risks'; and 'Population growth and its environmental impact'. To establish the scientific case for taking these themes forward, LESC put out calls for proposals for exploratory workshops for each of these, as well as for any other major areas which the scientific community believes should be explored. In addition, the Committee approved exploratory workshops on six other themes, which were either held during 1996 or will be addressed in 1997. These included: *Molecular Physiology*; *Theoretical Biology*; *Geodynamics and Ore Deposit Evolution* (GEODE); *Cyanobacterial Nitrogen Fixation; Consortium of European Taxonomic Facilities* (CETAF); and *Earthquakes and Megacities.* Like other exploratory workshops, these could lead to proposals for either programmes or networks.

Collaborating with other bodies

LESC has continued to develop its links with other bodies both within the ESF's structure and outside of it. The European Commission is an important partner in several LESC scientific activities - including the *Airborne Polar Experiment* (APE), the *European Programme for Ice coring in Antarctica* (EPICA), and *Europrobe*. The *ESF Consortium for Ocean Drilling* (ECOD) enables scientists from 11 European countries to participate in the Ocean Drilling Program led by the US National Science Foundation and improved links with organisations in eastern European countries have seen a growing number of Russian and other east European scientists involved in LESC activities such as *Quaternary Environment of the Eurasian North* (QUEEN), *European Lake Drilling* (ELDP) and *Europrobe* programmes.

Standing Committee for Physical and Engineering Sciences (PESC)

Scientific activities

Two new research programmes were commissioned during the year that underlined PESC's determination to strengthen the links between physics, chemistry, mathematics and applied fields. One of these programmes is focusing on *Applied Mathematics for Industrial Flow Problems* while the other will investigate *Highly Structured Stochastic Systems*. The Committee also developed a new transparent scheme for commissioning research programmes. Including regular calls for proposals, the scheme aims to ensure that both high-quality 'bottom-up' proposals from the scientific community and strategically driven 'top-down' views from the Member Organisations are accommodated. This will involve input from the ESF's Member Organisations. Overall, nine programmes and four networks were up and running during the year.

Strategic activities

PESC was actively involved in two key strategic issues. First, it contributed to the ESF's position paper, *Beyond Framework Programme IV*, which is covered extensively elsewhere in this annual report. Second, it helped develop the Foundation's role as a multidisciplinary clearing house for large research facilities in Europe. In particular, the Committee ran an exploratory workshop on the 'scientific prospects for neutron scattering with present and future resources' which brought together 10 working groups from a broad spectrum of basic and applied R&D disciplines involved in research into structural matter. The workshop's recommendations have been circulated to Member Organisations and other relevant bodies for their comments. PESC and the ESF secretariat also coordinated the initial stages of a forthcoming study of the scientific merit and feasibility of establishing a European laboratory for 100-tesla science.

Collaborating with other bodies

As well as helping to review several of the Foundation's Associated Committees (CRAF, ESSC and NuPECC), PESC agreed that it should hold regular face-to-face meetings with Member Organisations every two years in order to exchange information and ideas. Plans are now being formulated to do this. The Committee collaborated with the European Neutron Scattering Association in running the workshop on the future prospects of neutron scattering, and at the request of the Austrian Academy and the Austrian ministry for science, PESC will take action on behalf of the ESF in assessing two Austrian initiatives - the AUSTRON project, an initiative for a European spallation source of medium size and EUROCRYST - a proposed crystal growth laboratory.

Standing Committee for the Humanities (SCH)

Scientific activities

Preparations for a new programme on *Musical Institutions and the Circulation of Music and Musicians in Europe 1600-1914* advanced considerably during the year and the Committee now expects a full programme proposal to be presented to the Executive Council shortly. During this 300-year period, the complexities of European music and its evolution mirrored many of the developments in European society, notably growing internationalisation.

The programme will concentrate on the internationalisation of musical practices and tastes as well as resistance to this phenomenon including the rise of nationalism. The SCH also launched a programme on *Individual and Society in the Mediterranean Muslim World*, bringing the total number of programmes during the year up to four, covering subjects as diverse as the *Evolution of Chemistry in Europe (1789-1939)*, *the Transformation of the Roman World*, and *Concepts and Symbols of the Enlightenment*. In addition, there were five humanities networks running during the year. These included: *Science and the Visual Image (1500-1800)*; *Republicanism: a shared European heritage*; *Convergence and Divergence of Dialects in a Changing Europe*; *Palaeolithic Occupation of Europe* and *National Socialist Occupation Policy*.

Strategic activities

In the Foundation's paper *Beyond Framework Programme IV*, the Committee put forward a strong case for elevating the role of the humanities in the next Framework Programme. SCH believes this is especially important given the cultural complexities involved in European integration.

Collaborating with other bodies

The SCH continued to demonstrate the important contribution that the humanities can make to other scientific disciplines, such as the medical and social sciences, through a wide range of initiatives. The Asian Studies committee, which was set up in 1994 in conjunction with the SCSS and has since made considerable progress, is a case in point.

The Committee also organised, in collaboration with the SCSS, an exploratory workshop on the *Media and the European Dimension* which looks set to lead to a new programme proposal in 1997. In addition, the SCH initiated an exploratory workshop to address the issue of 'bioethics'. This took place in early 1997 and involved representatives from a wide range of scientific disciplines.

Standing Committee for the Social Sciences (SCSS)

Scientific activities

Four research programmes were underway in 1996 and all made impressive advances.

A programme on *European Management and Organisations in Transition* (EMOT), for instance, held six important workshops on issues such as 'Interorganisational Networks' and 'Patterns of Industrial Transformation'. In the meantime, the programme on *Geographic Information Systems: data integration and data base design* (GISDATA) continues to produce a variety of influential publications and results, while *Learning in Humans and Machines* (LHM) has enabled junior scientists to participate through an exchange scheme. Awareness of the goals of the *Tackling Environmental Resource Management* (TERM) programme has also been raised.

In addition, the SCSS was involved in four scientific networks

Strategic activities

European social science took a potentially major step forward when the SCSS approved an Expert Group's recommendation to fund a detailed blueprint for a European Social Survey.

If methodological and, more critically, funding issues can be resolved, the survey will provide a systematic and coherent longitudinal picture of European social and political attitudes, information that is vital for policy makers and the research community. The need for this type of survey was emphasised in the SCSS's contribution to the ESF's proposals for the EU's next Framework Programme.

In addition, the Committee invited proposals for exploratory grants on three new themes: Employment and Social Security Systems; Social, Economic and Political Implications of the Development of Digital Technology; and Informal Economy, Crime and Social Order. The call also included an 'open element' to stimulate ideas for other themes.

Collaborating with other bodies

The SCSS continued to build on its long history of collaborating with other bodies. During the year, the Committee held joint workshops on transport research with the USA's National Science Foundation and invited its existing scientific programmes to contribute to the ESF's new *Environment and Health* programme. The SCSS also joined forces with the SCH for an exploratory workshop on the subject of 'The Media and the European Dimension'.

Committee chairmanship

Professor Guido Martinotti came to the end of his five-year term as chairman of the SCSS in November 1996. He has been succeeded by Professor Robert Erikson of the Swedish Institute for Social Research.

Conference and network committee reports

European Research Conferences (EURESCO)

Aims

Jointly funded by the ESF and EC, European Research Conferences are designed to explore new scientific frontiers for Europe and to work towards possible research agendas by bringing together leading scientists. A high proportion of young researchers are also invited to participate, enabling them to learn and establish important long-term contacts.

Activities

In 1996, EURESCO organised 33 conferences: two in mathematics, five in physics, one in materials, seven in chemistry, six in life sciences, three in biomedicine and health, four in geosciences, one in environmental sciences, two in social sciences and two in the humanities. This brought the total number of conferences arranged by EURESCO since its inception in 1989 up to 218. To date, more than 17,000 scientists from across Europe have attended these events, including nearly 5,000 young researchers. Despite EURESCO's widely recognised contribution to pan-European scientific debate at the highest level, doubts about continued funding from outside sources have raised questions about its long-term viability. The Foundation will be actively looking at ways to resolve this issue in 1997.

Network Committee

Aims

Networks bring together scientists to stimulate and coordinate activities in specific fields in order to develop research at a European level. Interdisciplinarity within and between scientific areas is encouraged. Often network reports and publications or proposals for further research programmes lead to wider international collaboration as well as to on-going ESF activities.

Activities

Twenty-four networks were in various stages of operation during 1996, bringing the total number that have been funded by the Committee since its formation 10 years ago up to 55. Subjects ranged from *Oxide Crystals* and *The Convergence and Divergence of Dialects in a Changing Europe*, to *Systematic Biology* and *Transitions in Youth*. During the year, two new networks were commissioned: *Science and the Visual Image (1500-1800)*; and *Fossil Insects*. In addition, the Network Scheme was positively reviewed by an independent panel which recommended that the scheme should continue along broadly similar lines until the year 2001 when it will be reviewed again. A new brochure including concise reports on all the ESF's current networks along with revised guidelines for applicants was also produced during the year.

Associated board and committee reports

All Associated Committees - the Committee on Radio Astronomy Frequencies (CRAF), European Space Science Committee (ESSC), and the Nuclear Physics European Collaboration Committee (NuPECC) - were reviewed during the year by independent panels which recommended that they continue their current roles. A recurring theme in the panels' reviews was the need for Associated Committees to establish stronger links with the ESF's Standing Committees.

European Boards for Marine and Polar Science (EMaPS-Boards)

Aims

The EMaPS Boards were set up in 1995 to develop strategies that will enable European marine and polar scientists to use their research capacity more effectively and to tackle major long-term issues and programmes which are beyond the financial resources of a single nation to support.

Activities

In their first full year of operation, the Boards selected a number of priority initiatives. These ranged from providing scientific advice for the ESF's position paper on the next EC Framework Programme to stimulating a European contribution to deep sea drilling and encouraging further European activities in the Arctic. The Marine Board identified its main priority as facilitating the implementation of 'Grand Challenges' in marine biodiversity, ocean modelling, coastal research and the deep sea-floor. While the Polar Board focused its attention on carving out a strategic role for itself in the European Arctic alongside other existing Arctic bodies and the newly formed Arctic Council. It also began preparatory work for a number of Arctic research initiatives, supported by a database of Arctic programmes.

Committee on Radio Astronomy Frequencies (CRAF)

Aims

Representing all the major radio astronomical observatories in Europe, CRAF was established in 1988 to coordinate representations to the various national and supranational regulatory bodies within Europe for the protection of the Radio Astronomy Service (RAS).

Activities

During the year, the Committee focused on a number of potential threats to the future of radio astronomy. These included the compatibility of new Mobile Satellite Services with radio astronomy in the 1.6-Ghz bands and spurious emissions from Irium and other substances. The question of setting limits for these types of emissions was also addressed. A second updated edition of CRAF's highly popular *Handbook for Radio Astronomy* is now being prepared.

European Space Science Committee (ESSC)

Aims

The Committee's objectives include acting as a 'spokesbody' on European space research issues and promoting and facilitating the definition and organisation of space research programmes in Europe.

Activities

One of the highlights of the year was the start of a joint study with the US Space Studies Board (SSB) that will find out what can be learnt from past and present US-European space collaborations. Drafts of four chapters of the report, which looks at both successful and unsuccessful missions, have already been produced and the complete document is scheduled to be published in 1997. The ESSC also contributed to the ESF's Fifth Framework Programme proposal, advocating that space research should be included in the Programme.

Nuclear Physics European Collaboration Committee (NuPECC)

Aims

An ESF Associated Committee since 1990, NuPECC's mission is to strengthen European collaboration in nuclear physics and to define and promote a network of complementary facilities in the region. It also acts as a forum for discussing the scientific validity of creating additional facilities and enhancing existing facilities' instrumentation.

Activities

The Committee's quarterly magazine, *Nuclear Physics News International*, continued to play a key role in stimulating debate in the scientific community. NuPECC also published a major report, *Nuclear Physics in Europe: Highlights and Perspectives*, and coordinated various study groups. These covered subjects as diverse as 'Nuclear Structure at the Limits' and 'Nuclei far from Stability and Radioactive Beams'.

Scientific programmes

Often long-term, ESF scientific programmes bring together substantive research projects carried out by multinational teams of scientists. The following pages give details of the scientific programmes and their steering committees being supported by the ESF in 1996 and of the new programmes commissioned during the year.

Medical sciences

Developmental Biology (EDB)*

1992-1996
11 contributing organisations

The EDB's objective is to gain a clearer understanding of the genetic and molecular signalling hierarchies that regulate animal development.

S W de Laat (Chairman) *The Netherlands*
E Boncinelli *Italy*
P Ekblom *Sweden*
S H Fromm *Norway*
W J Gehring *Switzerland*
A Ghysen *Belgium*
P Gruss *Germany*
J B Gurdon *United Kingdom*
E Lehtonen *Finland*
J A Lepesant *France*
A McLaren *United Kingdom*
K Mollgård *Denmark*
Ch Nüsslein-Volhard *Germany*
ESF Scientific Secretary: **I Wünning**
ESF Contact: **B Schaller**
Tel: +33 (0)3 88 76 71 18
Email: bschaller@esf.org

Environment and Health (ENHE)* ** ***

1996-1999
18 contributing organisations

This programme is part of a joint initiative with the EC and the World Health Organisation to draw up a coherent European R&TD plan to be presented to the 1999 London Intergovernmental Conference on Environment and Health. It is focusing on identifying research priorities in support of policy formulation and on improving the range of tools available for environmental health management.

J Huttunen (Chairman) *Finland*
R Kroes (Programme Coordinator) *The Netherlands*
O Preining *Austria*
A Bernard *Belgium*
G Thiers *Belgium*
H Autrup *Denmark*
D Hemon *France*
C Braun-Fahrländer *Switzerland*
Sir Colin Berry *United Kingdom*
G Elzinga *The Netherlands*
H Greim *Germany*
A Hofman *The Netherlands*
L-G Nilsson *Sweden*
J Siegrist *Germany*
L Walløe *Norway*
Observers
C Nolan *European Commission*
R Bertollini *WHO/ECEH*
M Krzyzanowski *WHO/ECEH*
ESF Scientific Secretary: **I Wünning**
ESF Contact: **C Durant**
Tel: +33 (0)3 88 76 71 27
Email: cdurant@esf.org

The number of "contributing organisations" refers to the number of organisations supporting financially a programme for all or part of its duration

European Neuroscience Programme (ENP)

1992-1996
20 contributing organisations

ENP brings together scientists from Europe's neuroscience centres and encourages interdisciplinary collaboration through exchange visits, workshops, multinational research projects and thematic schools.

M M Burger (Chairman) *Switzerland*
J Dudel *Germany*
A Ferrus *Spain*
S Grillner *Sweden*
J Hamori *Hungary*
H Hultborn *Denmark*
M R Issidorides *Greece*
H Lang *Finland*
B E Leonard *Ireland*
T Lomo *Norway*
G Moonen *Belgium*
R G M Morris *United Kingdom*
B Soumireu-Mourat *France*
H Radner *Austria*
R Rahamimoff *Israel*
A Rosina *Italy*
F Rubia *Spain*
J C Stoof *The Netherlands*
A M Thierry *France*
J Toscana Rico *Portugal*
Advisory Board
G Berlucchi *Italy*
R Frackowiak *United Kingdom*
W H Gispen *The Netherlands*
C Goridis *France*
T Hökfelt *Sweden*
F Holsboer *Germany*
F Rubia *Spain*
W Singer *Germany*
ESF Scientific Secretary: **I Wünning**
ESF Contact: **C Durant**
Tel: +33 (0)3 88 76 71 27
Email: cdurant@esf.org

Immunogenetics of Allergy: towards prevention and care (IGA)

1997-1999
12 contributing organisations

Across Europe, the prevalence of atopic diseases and asthma is already high and is steadily increasing. This programme aims to identify the genes controlling atopy, to increase understanding of the cellular and molecular processes behind the body's immune response towards allergy, and to delineate the interplay between genotype and physiological and environmental factors.

D Charron (Chairman) *France*
B Bjorkstén *Sweden*
W Cookson *United Kingdom*
F Inacio *Portugal*
M L Kapsenberg *The Netherlands*
D Kraft *Austria*
C Lahoz *Spain*
J Lamb *United Kingdom*
H Lowenstein *Denmark*
E Maggi *Italy*
R Pauwels *Belgium*
G Peltre *France*
W J Pichler *Switzerland*
A Radbruch *Germany*
J-C Renauld *Belgium*
A Ruffilli *Italy*
A Svejgaard *Denmark*
E Thorsby *Norway*
ESF Scientific Secretary: **I Wünning**
ESF Contact: **B Schaller**
Tel: +33 (0)3 88 76 71 18
Email: bschaller@esf.org

Molecular Neurobiology of Mental Illness (MNMI)

1990-1996
14 contributing organisations

MNMI is mapping the entire human genome to identify the genes that are responsible for schizophrenia and affective disorder.

J Mallet (Chairman) *France*
M Ackenheil *Germany*
L Amaducci *Italy*
K Beyreuther *Germany*
F Clerget Darpoux (Consultant) *France*
K Davies *United Kingdom*
R Fog *Denmark*
P McGuffin *United Kingdom*
J Mendlewicz *Belgium*
M R Niermeijer *The Netherlands*
L Peltonen *Finland*
A M Rosina *Italy*
L A Sandkuijl (Consultant) *The Netherlands*
ESF Scientific Secretary: **I Wünning**
ESF Contact: **B Schaller**
Tel: +33 (0)3 88 76 71 18
Email: bschaller@esf.org

Programme of Fellowships in Toxicology and Environmental Toxicology (PFT)*

1992-1996
15 contributing organisations

PFT provides up to 50 bursaries a year for training and research in toxicology, reinforcing studies on environmental toxicology.

L Vittozzi (Chairman) *Italy*
C Almaça *Portugal*
H Autrup *Denmark*
A Bernard *Belgium*
H Bolt *Germany*
D S Davies *United Kingdom*
L Dencker *Sweden*
G Dirheimer *France*
H Greim *Germany*
S A Kyrtopoulos *Greece*
V M C Madeira *Portugal*
T Norseth *Norway*
F Oesch *Germany*
M Olsson *Sweden*
P Preziosi *Italy*
M Pugh *Ireland*
E Rodriguez-Farré *Spain*
Ch Schlatter *Switzerland*
J Schou *Denmark*
M I Sorsa *Finland*
J Tuomisto *Finland*
E Vilanova *Spain*
ESF Scientific Secretary: **I Wünning**
ESF Contact: **P Pirra**
Tel: +33 (0)3 88 76 71 29
Email: pft@esf.org

---

* (also affiliated LESC) ** (also affiliated PESC) *** (also affiliated SCSS)

Life and environmental sciences

Airborne Polar Experiment (APE)

1995-1999
5 contributing organisations

The programme concerns the coordination of an airborne experiment which is making use of a former spy plane as a stratospheric platform for *in situ* measurements of the minor atmospheric components, which are responsible for the greenhouse effect.

L Stefanutti (Chairman) *Italy*
V Khattatov (Deputy Chairman) *Russia*
G Amanatidis *European Commission*
R Azzolini *Italy*
G Braathen *Norway*
G Busca *Switzerland*
R Jones *United Kingdom*
T Peter *Germany*
J Ström *Sweden*
G Visconti *Italy*

Observers
R Mackenzie *United Kingdom*
M Molina *United States*
J P Pommereau *France*
A Tuck *United States*

ESF Scientific Secretary: **M Fratta**
ESF Contact: **P Pirra**
Tel: +33 (0)3 88 76 71 29
Email: lesc@esf.org

Biophysics of Photosynthesis (PHOT)**

1993-1997
15 contributing organisations

The study of photosynthetic reaction centres is an excellent model system for electron transfer reactions, which are crucial to many biological processes, and benefit investigations in molecular biology and biochemistry.

A J Hoff (Chairman) *The Netherlands*
J Aghion *Belgium*
R J Cogdell *United Kingdom*
G Garab *Hungary*
G Giacometti *Italy*
J Korppi-Tommola *Finland*
S Malkin *Israel*
P Mathis *France*
M E Michel-Beyerle *Germany*
M Miller *Denmark*
J Ormerod *Norway*
R Picorel *Spain*
S Styring *Sweden*

ESF Scientific Secretary: **A Moth Wiklund**
ESF Contact: **P Cosgrove**
Tel: +33 (0)3 88 76 71 06
Email: pcosgrove@esf.org

Climate and Fauna: A Database of the Quaternary Mammals of Europe (DATA)

1994-1996
4 contributing organisations

Mammalian fossils provide a rich source of information for the reconstruction of environmental conditions of the past.
The Quaternary was characterised by strong climatic changes. A survey covering Europe in its entirety is necessary for the significant changes to be seen.

W von Koenigswald (Chairman) *Germany*
L Werdelin (Secretary) *Sweden*
J Chaline *France*
M Fortelius *Finland*

ESF Scientific Secretary: **A Moth Wiklund**
ESF Contact: **P Cosgrove**
Tel: +33 (0)3 88 76 71 06
Email: pcosgrove@esf.org

ESF Consortium for Ocean Drilling (ECOD)

1986-1998
11 contributing organisations

The Ocean Drilling Program (ODP) is an international partnership, led by the US National Science Foundation, of scientists and institutions studying the geological and tectonic history of ocean basins worldwide as well as our planet's palaeo-environment. Through the ESF Consortium, scientists from Belgium, Denmark, Finland, Iceland, Italy, the Netherlands, Norway, Spain, Sweden, Switzerland, and Turkey have made important contributions.

ESF Management Committee for the ODP (EMCO)
S Egelund (Chairman) *Denmark*
H Hertogen (Vice-Chairman) *Belgium*
C Ehlers *Finland*
G Palmason *Iceland*
T Pedersen *Norway*
A Pérez-Estaún *Spain*
M L Ruscitto *Italy*
D A van der Kroef *The Netherlands*
M von Knorring *Sweden*
J-B Weber *Switzerland*
Y Yilmaz *Turkey*

ESF Scientific Secretary: **M Fratta**
ESF Contact: **M A Comte**
Tel: +33 (0)3 88 76 71 00
Email: macomte@esf.org

ESF Scientific Committee for the ODP (ESCO)
J McKenzie (Chairman) *Switzerland*
Yngve Kristoffersen (Vice-Chairman) *Norway*
I Premoli-Silva *Italy*
N Holm *Sweden*
M C Comas *Spain*
C Ehlers *Finland*
N Görür *Turkey*
A Sveinsbjornsdottir *Iceland*
N Mikkelsen *Denmark*
J Smit *The Netherlands*
D Weis *Belgium*

Scientific Secretary:
S Spezzaferri *Italy*

European Ice Sheet Modelling Initiative (EISMINT)

1993-1997
10 contributing organisations

In the context of understanding the role of ice sheets in the global climate system, mathematical modelling is central to studies of ice-sheet behaviour. This programme came from work within the joint ESF/EU European Committee for Ocean and Polar Sciences (ECOPS).

C Doake (Chairman) *United Kingdom*
H Björnsson *Iceland*
H Blatter *Switzerland*
D Dahl-Jensen *Denmark*
D J Drewry *United Kingdom*
P Holmlund *Sweden*
P Huybrechts *Belgium*
A Letréguilly / C Ritz *France*
H Miller *Germany*
J Oerlemans *The Netherlands*
G Tabacco *Italy*

ESF Scientific Secretary: **M Fratta**
ESF Contact: **P Pirra**
Tel: +33 (0)3 88 76 71 29
Email: lesc@esf.org

European Lake Drilling Programme (ELDP)

1996-2000
8 contributing organisations

This programme aims to recover specific annually laminated lake sediments to study the palaeoenvironmental conditions of Europe. In addition, a long list of other interesting parameters can be measured in these sediment samples such as past magnetic fields, palaeotemperatures, plan distribution through pollen analysis, sediment fluxes and, indirectly, the solar-terrestrial forcing.

J F W Negendank (Chairman) *Germany*
B E Berglund *Sweden*
F Gasse *France*
M Ralska-Jasiewicz *Poland*
G Seret *Belgium*
M Sturm *Switzerland*
H Vos *Germany*
ESF Scientific Secretary: **M Fratta**
ESF Contact: **P Pirra**
Tel: +33 (0)3 88 76 71 29
Email: lesc@esf.org

European Project for Ice Coring in Antarctica (EPICA)

1996-2000
10 contributing organisations

Geographical location, ice thickness and climatology combine to make Antarctica the storehouse of the longest and most representative proxy data for the composition and temperature of ancient atmospheres. This project of complex logistics and scientific cooperation is the first "Grand Challenge" identified by the European Committee for Ocean and Polar Sciences (ECOPS).

J Jouzel (Chairman) *France*
H Miller (Co-Vice Chairman) *Germany*
G Orombelli (Co-Vice Chairman) *Italy*
R Gendrin *France*
N Gundestrup *Denmark*
C Hammer *Denmark*
H-C Hansson *Sweden*
H Kohnen *Germany*
C Lorius *France*
J Oerlemans *The Netherlands*
D Peel *United Kingdom*
D Raynaud *France*
R Souchez *Belgium*
B Stauffer *Switzerland*
I Troen *European Commission*
J-G Winther *Norway*
ESF Scientific Secretary: **M Fratta**
ESF Contact: **P Pirra**
Tel: +33 (0)3 88 76 71 29
Email: lesc@esf.org

European Volcanological Project (EVOP)

1992-1996
8 contributing organisations

The project follows from an ESF network on volcanology, and concentrates upon six 'laboratory-volcanoes' to increase European scientific knowledge of these phenomena.

F Barberi (Chairman) *Italy*
V Arana *Spain*
J-L Cheminée *France*
V H Forjaz *Portugal*
M Fytikas *Greece*
A Hirn *France*
F Innocenti *Italy*
J Keller *Germany*
B Rodrigues *Portugal*
G Sigvaldason *Iceland*
ESF Scientific Secretary: **M Fratta**
ESF Contact: **P Pirra**
Tel: +33 (0)3 88 76 71 29
Email: lesc@esf.org

Europrobe

1992-1998
14 contributing organisations

Europrobe is designed to increase our understanding of the tectonic evolution of the Earth's crust and mantle and the dynamic processes that led to its current state. Drawing on the expertise of more than 500 geoscientists from 24 European countries, the programme is studying a section of the lithosphere that straddles Western and Eastern Europe, from the Atlantic to the Urals.

Scientific Steering Committee (ESSC) and Management Committee (EMC)
D Gee (ESSC Chairman) *Sweden*
D Maronde (EMC Chairman) *Germany*
A Adám *Hungary*
J Ansorge *Switzerland*
U Avedis *Austria*
E Banda *Spain*
A B Carlson *Norway*
S Egelund *Denmark*
A Guterch *Poland*
J Kakkuri *Finland*
J Klerkx *Belgium*
D A van der Kroef *The Netherlands*
Y G Leonov *Russia*
P Matte *France*
L A Mendes Victor *Portugal*
C Morelli *Italy*
A Morosov *Russia*
J Negendank *Germany*
R C Padgham *United Kingdom*
A Perez-Estaun *Spain*
G Poupinet *France*
T Sheedy *Ireland*
V Starostenko *Ukraine*
R A Stephenson *The Netherlands*
M von Knorring *Sweden*
J-B Weber *Switzerland*
M Wilson *United Kingdom*
ESF Scientific Secretary: **M Fratta**
ESF Contact: **P Pirra**
Tel: +33 (0)3 88 76 71 29
Email: lesc@esf.org

Plant Adaptation

1997-2001
16 contributing organisations

Adaptation to environmental conditions has been the key to success for plant species still existing today. Understanding how adaptation takes place is a major issue for both agriculture and forestry as well as for studies on environmental change. This programme aims to take advantage of recent advances in the fields of ecology, genetics, molecular biology and physiology to study issues ranging from climatic adaptation and the genetic basis of adaptation through to understanding and quantifying natural selection.

Provisional Steering Committee
O Savolainen (Chairperson) *Finland*
M Aguadé *Spain*
F B Christiansen *Denmark*
R Ennos *United Kingdom*
B Hohn *Switzerland*
D W Lawlor *United Kingdom*
A Leone *Italy*
I Olivieri *France*
M S Pais *Portugal*
G Theissen *Germany*
J van Damme *The Netherlands*
G Vida *Hungary*

Alternate members
J Ågren *Sweden*
P Engström *Sweden*
P Breyne *Belgium*
M Van Montagu *Belgium*

ESF Scientific Secretary: **A Moth Wiklund**
ESF Contact: **J Dalton**
Tel: +33 (0)3 88 76 71 22
Email: jdalton@esf.org

Population Biology (POBI)

1994-1998

10 contributing organisations

This programme aims to stimulate synthesis, integration, and an evolutionary approach to ecology and genetics across national borders in Europe. It is focused on three central themes: genetic conflicts; population structure; and life histories which share a unifying perspective of evolution.

S Stearns (Chairman) *Switzerland*
R Barbault *France*
B O Bengtsson *Sweden*
C Godfray *United Kingdom*
I Hanski *Finland*
W Lampert *Germany*
V Loeschcke *Denmark*
J Pasteels *Belgium*
W van Delden *The Netherlands*

ESF Scientific Secretary: **A Moth Wiklund**
ESF Contact: **P Cosgrove**
Tel: +33 (0)3 88 76 71 06
Email: pcosgrove@esf.org

Quaternary Environment of the Eurasian North (QUEEN)

1996-2000

7 contributing organisations

The aim of this programme is to utilise the ongoing activities and projects operating in several sectors of the Eastern Arctic regions and the many bilateral projects between Russian and Western European research groups in order to formulate a research programme which will study the modern and past environmental changes in a structured and coordinated manner.

J Thiede (Chairman) *Germany*
J A Dowdeswell *United Kingdom*
A Elverhøi (CAPE liaison)
V Astakhov *Russia*
D Y Bolshiyarov *Russia*
S Funder *Denmark*
C Hjort *Sweden*
V M Kotlyakov *Russia*
J Mangerud *Norway*
S M Pryamikov *Russia*
M Saarnisto *Finland*
C Schluechter *Switzerland*

ESF Scientific Secretary: **M Fratta**
ESF Contact: **P Pirra**
Tel: +33 (0)3 88 76 71 29
Email: lesc@esf.org

Transport Processes in the Atmosphere and Oceans (TAO)

1996-1999

8 contributing organisations

This programme concerns the transport processes in the geophysical fluids, atmosphere and oceans, from a theoretical and numerical point of view. It is not only an exercise of difficult mathematics, but the results will be useful to applied scientists and decision makers in environmental policy.

V Artale (Chairman) *Italy*
A Babiano *France*
K Fraedrich *Germany*
P Haynes *United Kingdom*
A Provenzale *Italy*
J Rasmussen *Denmark*
E Aurell *Sweden*
S Gama *Portugal*

Observers
B L Hua *France*
R Pasmanter *The Netherlands*
O Piro *Spain*

ESF Scientific Secretary: **M Fratta**
ESF Contact: **P Pirra**
Tel: +33 (0)3 88 76 71 29
Email: lesc@esf.org

Tropical Canopy Research (TCR)

1994-1998

5 contributing organisations

In this programme are studied the patterns and processes that lead to and maintain the immense diversity of life in the tropics. The programme should provide a greater understanding of tropical forest ecosystem functioning and the significance of biodiversity in its structural and functional maintenance and regeneration.

E Linsenmair (Chairman) *Germany*
H Balslev *Denmark*
A Cleef *The Netherlands*
B Fiala *Germany*
W Morawetz *Austria*
G Vendramin *Italy*

Observers
P Charles-Dominique *France*
A Davis *United Kingdom*
S Sutton *United Kingdom*

ESF Scientific Secretary: **A Moth Wiklund**
ESF Contacts: **C Lobstein/J Dalton**
Tel: +33 (0)3 88 76 71 21
Email: clobstein@esf.org

Physical and engineering sciences

Applied Mathematics for Industrial Flow Problems (AMIF)

1997-2001

10 contributing organisations

By applying pure mathematics and numerical analysis to the study of turbulence and other associated highly complex flow problems, this programme aims to provide research results of industrial relevance.
Its goals are to improve the mathematical development of fluid flow modelling, the advancement of existing numerical solution methods, and to increase understanding of the strengths of new approaches in fluid dynamics, nonlinear analysis, and numerical analysis.

P L Lions (Co-Chairman) *France*
A Quarteroni (Co-Chairman) *Italy*
M Baines *United Kingdom*
F Brezzi *Italy*
H Deconink *Belgium*
M Deville *Switzerland*
B Engquist *Sweden*
M Espedal *Norway*
O Pironneau *France*
W Wendland *Germany*
P Wesseling *The Netherlands*

ESF Scientific Secretary: **H U Karow**
ESF Contact: **C Werner**
Tel: +33 (0)3 88 76 71 28
Email: cwerner@esf.org

Artificial Biosensing Interfaces (ABI)

1994-1998

10 contributing organisations

This programme was developed through the former European Science Research Councils' Technical Sciences Committee, and links collaborating centres in the fields of characterisation of simple and complex substrates; substrate modification and coupling of biomolecules; matrix effects on biomolecule functions; transduction phenomena and biorecognition.

R P Revoltella (Chairman) *Italy*
M Mascini (Co-Chairman) *Italy*
S Alegret *Spain*
P Coulet *France*
W Göpel *Germany*
J M Kauffmann *Belgium*
M Koudelka-Hep *Switzerland*
J Lekkala *Finland*
B Liedberg *Sweden*
P Tunon *Spain*

ESF Scientific Secretary: **H U Karow**
ESF Contact: **C Werner**
Tel: +33 (0)3 88 76 71 28
Email: cwerner@esf.org

Chemistry of Metals in Biological Systems (METBIO)*

1991-1997

13 contributing organisations

Metals play a role in many important biological functions, such as the actions of most enzymes, the transfer of signals, and the formation of minerals as in teeth or bones. This research field is currently called bioinorganic chemistry. It has an interdisciplinary nature involving chemists, biochemists, as well as microbiologists and spectroscopists.

C D Garner (Chairman) *United Kingdom*
J Ulstrup (Vice-Chairman) *Denmark*
I Bertini *Italy*
R R Crichton *Belgium*
S Forsén *Sweden*
C Gómez-Moreno *Spain*
F Gonzales-Vílchez *Spain*
H Sigel *Switzerland*
I Sóvágó *Hungary*
A Trautwein *Germany*
C Veeger *The Netherlands*
R Weiss *France*
A Xavier *Portugal*

ESF Scientific Secretary: **A Moth Wiklund**
ESF Contacts: **C Lobstein/J Dalton**
Tel: +33 (0)3 88 76 71 21
Email: clobstein@esf.org

Control of Complex Systems (COSY)

1995-1999

14 contributing organisations

The COSY Programme aims to promote a multi-disciplinary activity which will enable basic theory to be furthered on control science and systems modelling and integration, thus bridging the gap between conceptual, analytical and experimental control engineering. In particular, it aims to study tools which are capable of analysing control systems with the increased complexity and hybrid nature resulting from compatible, consistent use of combined heuristic, quantitative and qualitative information, together with expert knowledge, in a supervised control system architecture.

M Thoma (Chairman) *Germany*
P Albertos *Spain*
K J Åström *Sweden*
M Blanke *Denmark*
Z Bubnicki *Poland*
A Dourado-Correia *Portugal*
P Frank *Germany*
M Gevers *Belgium*
L Keviczky *Hungary*
U Kortela *Finland*
R J Patton *United Kingdom*
W Schaufelberger *Switzerland*
E Tulunay *Turkey*
J C Willems *The Netherlands*

Observers
G Dimirovski *Former Yugoslav Republic of Macedonia*
A Isidori *Italy*
S Skogestad *Norway*

ESF Scientific Secretary: **H U Karow**
ESF Contact: **P Cosgrove**
Tel: +33 (0)3 88 76 71 06
Email: pcosgrove@esf.org

---

* (also affiliated LESC)

Highly Structured Stochastic Systems (HSSS)

1997-2000

10 contributing organisations

Complex stochastic models have in recent years found applications in areas as diverse as expert systems, genetics, and statistical mechanics. This programme is bringing together researchers from the related areas of probability and statistics to tackle new challenges including developing diagnostic and analytic tools for model criticism; understanding sensitivity of models to local specifications; identifying limits of causal interpretation in networks representing observational studies; and extending the theory and methodology to systems that develop over time.

S Lauritzen (Chairman) *Denmark*
E Arjas *Finland*
A Frigessi *Italy*
R D Gill *The Netherlands*
P Green *United Kingdom*
N L Hjort *Norway*
A O'Hagan *United Kingdom*
S Richardson *France*
N Wermuth *Germany*

ESF Scientific Secretary: **H U Karow**
ESF Contact: **C Werner**
Tel: +33 (0)3 88 76 71 28
Email: cwerner@esf.org

Kinetic Processes in Minerals and Ceramics (MINC)

1992-1996

12 contributing organisations

Most minerals and ceramics are formed at high temperatures and pressures. This programme is using *in situ* measurements to shed light on their properties and issues such as decay, corrosion and deformation.

E Salje (Chairman) *United Kingdom*
M Catti *Italy*
M O Figuereido *Portugal*
J M Garcia Ruiz *Spain*
P Kofstad *Norway*
K L Komarek *Austria*
K Korsman *Finland*
A Krajewski *Italy*
Y Limoge *France*
F Seifert *Germany*
G van Tendeloo *Belgium*

ESF Scientific Secretary: **H U Karow**
ESF Contact: **C Werner**
Tel: +33 (0)3 88 76 71 28
Email: cwerner@esf.org

Mathematical Treatment of Free Boundary Problems (FBP)

1993-1997

17 contributing organisations

Free boundaries are curves or surfaces with *a priori* unknown location in space which separate regions with different characteristics. They occur in a variety of natural and technological processes and have the common characteristics of requiring complex and difficult mathematics. The rapid growth of this topic and the new and difficult mathematical challenges require a continuous combined effort by European FBP scientists in order to maintain their enhanced interaction and contribution to the scientific development of this important area.

J F Rodrigues (Chairman) *Portugal*
H W Alt *Germany*
A Bermudez *Spain*
A Bossavit *France*
M Chipot *France (to Nov 96)*
H van Duijn *The Netherlands*
P Neittaanmaki *Finland*
M Niezgodka *Poland*
M Primicerio *Italy*

ESF Scientific Secretary: **H U Karow**
ESF Contact: **C Werner**
Tel: +33 (0)3 88 76 71 28
Email: cwerner@esf.org

Process Integration in Biochemical Engineering (PIBE)*

1992-1997

13 contributing organisations

The main focus of this research is on integrated bioprocessing, an interdisciplinary approach that includes protein, metabolic and process engineering in order to link basic development in the biosciences with possible industrial application.

K Ch A M Luyben (Chairman)
The Netherlands
L M van der Wielen (Secretary)
The Netherlands
R Aarts *Finland*
J J Van Beeumen *Belgium*
J M S Cabral *Portugal*
S O Enfors *Sweden*
P Kieran *Ireland*
M Lilly *United Kingdom*
M Reuss *Germany*
U von Stockar *Switzerland*
L Viikari *Finland*
J Villadsen *Denmark*

ESF Scientific Secretary: **A Moth Wiklund**
ESF Contact: **P Cosgrove**
Tel: +33 (0)3 88 76 71 06
Email: pcosgrove@esf.org

Relativistic Effects in Heavy Element Chemistry and Physics (REHE)

1993-1997

10 contributing organisations

This programme enables European scientists to share in forthcoming developments in relativistic quantum chemistry and relativistic molecular physics, bringing together the expertise of workers in different branches of the field and overcoming communication barriers.

P Pyykkö (Chairman) *Finland*
E J Baerends *The Netherlands*
J P Daudey *France*
K Faegri *Norway*
I P Grant *United Kingdom*
B Hess *Germany*
J Karwowski *Poland*
K Schwarz *Austria*
A Sgamellotti *Italy*

ESF Scientific Secretary: **H U Karow**
ESF Contact: **C Werner**
Tel: +33 (0)3 88 76 71 28
Email: cwerner@esf.org

---

* (also affiliated LESC)

Vapour-phase Synthesis and Processing of Nano-particle Materials (NANO)

1995-1999

9 contributing organisations

The NANO programme aims to promote, by bringing together researchers from the aerosol community and the materials science community, the synthesis of ceramic aerosols and films using gas phase techniques, with the aim of generating single-phase, or nanodispersed structural ceramic materials and electroceramics with new or improved properties.

H Fissan (Co-Chair) *Germany*
J Schoonman (Co-Chair) *The Netherlands*
F Besenbacher *Denmark*
B J Briscoe *United Kingdom*
J Carlsson *Sweden*
H Gleiter *Germany*
M Grätzel *Switzerland*
E I Kauppinen *Finland*
J Pielaszek *Poland*
R Winand *Belgium*

Observer
J C Joubert *France*

ESF Scientific Secretary: **H U Karow**
ESF Contact: **P Cosgrove**
Tel: +33 (0)3 88 76 71 06
Email: pcosgrove@esf.org

Humanities

Asian Studies ***

1994-1997

13 contributing organisations

The ESF Asia Committee was set up to develop interdisciplinary collaborative projects in the broad field of Asian Studies. A post-doc fellowship programme has been launched along with a scheme to support high quality workshops in Asian Studies with an emphasis on collaboration and joint initiatives with scholars and institutions from Asia and the United States.

Th Svensson (Chairman) *Denmark/Sweden*
D Lombard (Vice-Chairman) *France*
W A L Stokhof (Secretary) *The Netherlands*
J C Breman *The Netherlands*
E Collotti Pischel *Italy*
J-P Drège *France*
G Dudbridge *United Kingdom*
Gh Gnoli *Italy*
T King *United Kingdom*
I Hijiya-Kirschnereit *Germany*
W Klenner *Germany*
B Kölver *Germany*
U Kratz *United Kingdom*
C MacDonald *France*
W Marschall *Switzerland*
J Martinussen *Denmark*
J R Pitte *France*
K M Schipper *The Netherlands*
E Steinkellner *Austria*
N Thê Anh *France*
P-E Will *France*

Observers
M Boiteux *Ministère de l'Éducation Nationale et de l'Enseignement Supérieur et de la Recherche, France*
C Gluck *Association for Asian Studies, United States*
M Van Hall *Ministry of Education, Cultural Affairs and Science, The Netherlands*
C Kurokawa *The Toyota Foundation, Japan*

ESF Scientific Secretary: **M Sparreboom**
ESF Contact: **C Durant**
Tel: +33 (0)3 88 76 71 27
Email: cdurant@esf.org

Concepts and Symbols of the 18th Century in Europe (CSE)

1994-1997

11 contributing organisations

The 18th century was an important moment in the development of European society and culture. This programme attempts to recreate the symbolic universe of this period by studying five main issues: enlightenment, man and nature, opinion, liberty and visualisation.

R Mortier (Chairman) *Belgium*
P-E Knabe (Vice-Chairman) *Germany*
R Darnton *United States*
J Ehrard *France*
W Th M Frijhoff *The Netherlands*
N Hampson *United Kingdom*
C Iglesias Cano *Spain*
F Moureau *France*
J Pedersen *Denmark*
G von Proschwitz *Sweden*
D Roche *France*
C Salomon-Bayet *France*
J Starobinski *Switzerland*
T Winther *Norway*

ESF Scientific Secretary: **G Darmon**
ESF Contacts: **C Lobstein/J Dalton**
Tel: +33 (0)3 88 76 71 21
Email: clobstein@esf.org

The Evolution of Chemistry in Europe 1789-1939 (HIOC)

1993-1997

10 contributing organisations

At the end of the 18th century, chemistry moved from being an 'alchemist's art' to a fully-fledged science. This programme is studying three main themes in the historical development of chemistry: the role and importance of Lavoisier's *nomenclatura*; the change in the academic and social status of the chemist; and the contribution that chemistry has made to public health and welfare.

C Meinel (Chairman) *Germany*
F Abbri *Italy*
R G W Anderson *United Kingdom*
B Bensaude-Vincent *France*
F Caron *France*
N Dazzi *Italy*
D M X Donnelly *Ireland*

*** (also affiliated SCSS)

T Frängsmyr *Sweden*
A L Janeira *Portugal*
H Kragh *Denmark*
D Knight *United Kingdom*
J Ordóñez *Spain*
R Roulet *Switzerland*
I Stengers *Belgium*

ESF Scientific Secretary: **G Darmon**
ESF Contacts: **C Lobstein/J Dalton**
Tel: +33 (0)3 88 76 71 21
Email: clobstein@esf.org

Individual and Society in the Mediterranean Muslim World (ISMM)

1996-1999
14 contributing organisations

The objective of this European programme is to seek to define the relationship between the individual and society in such a way as to understand, for each period of Islamic history, the organisation of interdependent relationships, the position attributed to the individual, and the creation of a hierarchy of the values which rule society.

R Ilbert (Chairman) *France*
A Avanzini *Italy*
C J Bürgel *Switzerland*
M H Cherif *Tunisia*
F Dassetto *Belgium*
J H R Davis *United Kingdom*
L Tarazi Fawaz *United States*
U Haarmann *Germany*
J Hjärpe *Sweden*
R Kruk *The Netherlands*
M Marin *Spain*
T Melasuo *Finland*
G Mirdal *Denmark*
E Toledano *Israel*
K S Vikor *Norway*
J Zdanowski *Poland*

Observer:
A Kazancigil *France*

ESF Scientific Secretary: **G Darmon**
ESF Contacts: **C Lobstein/J Dalton**
Tel: +33 (0)3 88 76 71 21
Email: clobstein@esf.org

The Transformation of the Roman World (TRW)

1993-1997
14 contributing organisations

This programme is shedding light on the social and cultural transitions that are currently affecting Europe by studying the ancient Roman world during its period of transformation.

J Arce (Co-ordinator) *Spain*
E Chrysos (Co-ordinator) *Greece*
I Wood (Co-ordinator) *United Kingdom*
G Akerström-Hougen *Sweden*
M Barcelo *Spain*
V Bierbrauer *Germany*
G-P Brogiolo *Italy*
A Dierkens *Belgium*
N Hannestad *Denmark*
R Hodges *United Kingdom*
M Mazza *Italy*
M Mostert *The Netherlands*
P Périn *France*
W Pohl *Austria*
H H van Regteren Altena *The Netherlands*
H G Resi *Norway*
L Cracco Ruggini *Italy*
F Theuws *The Netherlands*
P Urbanczyk *Poland*
L Webster *United Kingdom*

ESF Scientific Secretary: **V Lepistö-Kirsilä**
ESF Contact: **J Freshwater**
Tel: +33 (0)3 88 76 71 26
Email: humanities@esf.org

Social sciences

Blueprint for a European Social Survey (ESS)

1997
18 contributing organisations

A European Social Survey (ESS) holds the potential of becoming a major innovative step in achieving the necessary infrastructure for effective comparative analysis of European citizens' values and attitudes in the face of social, economic and political change. In preparing a blueprint for an ESS as a regular research instrument, this initiative will address also the important issue that such a survey could fulfil the equivalent need for the social scientist that the 'large research facility' does for the natural scientist.

M Kaase (Chairman) *Germany*
KH Müller *Austria*
F Thys-Clément *Belgium*
H Gaus Ghent *Belgium*
N Ploug *Denmark*
L Nordberg *Finland*
B Cautrès *France*
M Laver *Ireland*
G Martinotti *Italy*
IAL Stoop *The Netherlands*
S Kuhnle *Norway*
H Domanski *Poland*
A Brandâo Moriz *Portugal*
J Ramón Montero *Spain*
R Åberg *Sweden*
P Farago *Switzerland*
Y Esmer *Turkey*
M Warren *United Kingdom*
to be appointed *Hungary*

Observer
S Schwartz *Israel*

ESF Scientific Secretary: **J H Smith**
ESF Contact: **C Mabrouk**
Tel: +33 (0)3 88 76 71 31
Email: scss@esf.org

European Management and Organisations in Transition (EMOT)

1993-1997

11 contributing organisations

EMOT is looking at the different types of economic organisation within Europe and how these are changing, as well as interregional and international integration of organisations as firms respond to the new climate of internationalism within Eastern and Western Europe.

A Grandori (Co-Chairman) *Italy*
R Whitley (Co-Chairman) *United Kingdom*
B Mundell (Research Co-ordinator) *Italy*
J L Alvarez *Spain*
T Colbjørnsen *Norway*
L Engwall *Sweden*
H Gahmberg *Finland*
A Kieser *Germany*
P E Mouritzen *Denmark*
G A van der Knaap *The Netherlands*
A Wassenberg *The Netherlands*

ESF Scientific Secretary: **G Darmon**
ESF Contacts: **C Lobstein/J Dalton**
Tel: +33 (0)3 88 76 71 21
Email: clobstein@esf.org

Geographic Information Systems: data integration and data base design (GISDATA)

1993-1997

15 contributing organisations

Building on national research efforts, GISDATA's aim is to promote collaborative ventures that will help researchers overcome the limitations of integrating pan-European spatial data as well as design pan-European databases and environmental and social applications that can be used across Europe.

I Masser (Co-Director) *United Kingdom*
F Salgé (Co-Director) *France*
A M Arnaud *Portugal*
H-P Bähr *Germany*
K Brassel *Switzerland*
M Craglia (Research Co-ordinator) *United Kingdom*
J-P Donnay *Belgium*
M Fischer *Austria*
M Goodchild *United States of America*
E Holm *Sweden*
P Mogorovich *Italy*
N D Polydorides *Greece*
H J Scholten *The Netherlands*
E M Sorensen *Denmark*
G H Strand *Norway*
A Susanna *Italy*

ESF Scientific Secretary: **J H Smith**
ESF Contact: **C Mabrouk**
Tel: +33 (0)3 88 76 71 31
Email: scss@esf.org

Learning in Humans and Machines (LHM)

1994-1997

9 contributing organisations

Drawing on psychology, computer science, educational research and sociology, this programme's objective is to create a new discipline in order to help us understand learning processes. In its last phase the programme is integrating elements of neuroscience and neurocomputing.

H Spada (Chairman) *Germany*
L Saitta (Co-Chair) *Italy*
R Piola (Research Co-ordinator) *Italy*
P Reimann (Research Co-ordinator) *Germany*
P Dillenbourg *Switzerland*
P Light *United Kingdom*
P Mendelsohn *Switzerland*
G Mirdal *Denmark*
A Öhman *Sweden*
T M O'Shea *United Kingdom*
R Raivola *Finland*
M van Someren *The Netherlands*
G Vignaux *France*

ESF Scientific Secretary: **G Darmon**
ESF Contacts: **C Lobstein/J Dalton**
Tel: +33 (0)3 88 76 71 21
Email: clobstein@esf.org

Tackling Environmental Resource Management (TERM)

1995-1997

14 contributing organisations

TERM provides a forum where social science researchers involved in environmental studies at a national level can pool and share their expertise to tackle European-wide issues. The programme is also building up a comprehensive inventory of social science research in this field, enabling scientists to identify prospective partners and build on their current achievements.

Bert van der Knaap (Chairman) *The Netherlands*
F Chiarello *Italy*
R del Ciello *Italy*
D Frey *Germany*
O Godard *France*
R Hoppe *The Netherlands*
M Redclift *United Kingdom*
J Skea *United Kingdom*
M Skou Anderson *Denmark*
H Spada *Germany*

Observer:
Andrew Sors *European Commission*

ESF Scientific Coordinator: **P Koutstaal**
Tel: +33 (0)3 88 76 71 42
Email: pkoutstaal@esf.org

Scientific programmes at a glance

Medical sciences

Programmes	Duration	Supported for whole or part of duration by Member Organisations from:	Affiliation*
Developmental Biology (EDB)	1992-1996	B, CH, D, DK, F, FIN, I, N, NL, S, UK	EMRC/LESC
Environment and Health (ENHE)	1996-1999	A, B, CH, D, DK, F, FIN, IRL, N, NL, P, S, UK	EMRC/LESC PESC/SCSS
European Neuroscience Programme (ENP)	1992-1996	A, B, CH, D, DK, E, F, FIN, GR, H, I, IRL, N, NL, P, S, UK	EMRC
Immunogenetics of Allergy: towards prevention and care (IGA)	1997-1999	A, B, CH, D, DK, FIN, IS, N, NL, P, PL, S	EMRC
Molecular Neurobiology of Mental Illness (MNMI)	1990-1996	A, B, CH, D, DK, F, FIN, GR, IRL, N, NL, P, S, UK	EMRC
Programme of Fellowships In Toxicology and Environmental Toxicology (PFT)	1992-1996	B, CH, D, DK, E, F, FIN, GR, I, IRL, N, P, S, UK	EMRC/LESC

Life and environmental sciences

Programmes	Duration	Supported for whole or part of duration by Member Organisations from:	Affiliation*
Airborne Polar Experiment (APE)	1995-1999	CH, D, I, S	LESC
Biophysics of Photosynthesis (PHOT)	1993-1997	B, D, DK, E, F, FIN, H, I, N, NL, S, UK	LESC/PESC
Climate and Fauna: a Database of Quaternary Mammals of Europe (DATA)	1994-1996	D, F, FIN, S	LESC
ESF Consortium for Ocean Drilling (ECOD)	1986-1998	B, CH, DK, E, FIN, I, IS, N, NL, S, TR	LESC
European Ice Sheet Modelling Initiative (EISMINT)	1993-1997	B, CH, D, DK, F, I, IS, NL, S, UK	LESC
European Lake Drilling Programme (ELDP)	1996-2000	B, CH, F, D, I, N, PL, S	LESC
European Project for Ice Coring in Antarctica (EPICA)	1996-2000	B, CH, D, DK, F, NL, S, UK	LESC
European Volcanological Project (EVOP)	1992-1996	D, E, F, GR, I, IS, P	LESC
Europrobe	1992-1998	A, B, CH, D, DK, E, F, FIN, H, IRL, I, N, NL, P, S, UK	LESC
Plant Adaptation	1997-2001	B, CH, D, DK, E, F, FIN, H, I, NL, P, S, UK	LESC
Population Biology (POBI)	1994-1998	B, CH, D, DK, F, FIN, NL, S, UK	LESC
Quaternary Environment of the Eurasian North (QUEEN)	1996-2000	CH, DK, FIN, D, N, S, UK	LESC
Transport Processes in the Atmosphere and Oceans (TAO)	1996-1999	CH, D, DK, F, I, P, S, UK	LESC
Tropical Canopy Research (TCR)	1994-1998	A, D, DK, I, NL	LESC

Physical and engineering sciences

Programmes	Duration	Supported for whole or part of duration by Member Organisations from:	Affiliation*
Applied Mathematics for Industrial Flow Problems (AMIF)	1997-2001	B, CH, D, DK, FIN, N, NL, PL, S	PESC
Artificial Biosensing Interfaces (ABI)	1994-1998	B, CH, D, E, F, FIN, I, S	PESC
Chemistry of Metals in Biological Systems (METBIO)	1991-1997	B, CH, D, DK, E, I, N, NL, P, S, UK	PESC/LESC
Control of Complex Systems (COSY)	1995-1999	B, CH, D, DK, E, FIN, H, NL, P, PL, S, TR, UK	PESC
Highly Structured Stochastic Systems (HSSS)	1997-2000	B, CH, D, DK, FIN, N, NL, S, UK	PESC
Kinetic Processes in Minerals and Ceramics (MINC)	1992-1996	B, CH, D, E, F, FIN, I, N, P, UK	PESC
Mathematical Treatment of Free Boundary Problems (FBP)	1993-1997	B, CH, D, DK, E, F, FIN, I, N, NL, P, PL, S, UK	PESC
Process Integration in Biochemical Engineering (PIBE)	1992-1997	B, CH, D, DK, F, FIN, I, IRL, N, NL, P, S, UK	PESC/LESC
Relativistic Effects in Heavy Element Chemistry and Physics (REHE)	1993-1997	D, DK, F, FIN, I, N, NL, PL, S, UK	PESC
Vapour-phase Synthesis and Processing of Nano-particle Materials (NANO)	1995-1999	B, CH, D, DK, FIN, NL, PL, S, UK	PESC

Humanities

Programmes	Duration	Supported for whole or part of duration by Member Organisations from:	Affiliation*
Asian Studies	1994-1997	A, B, CH, D, DK, F, FIN, N, NL, S, UK	SCH/SCSS
Concepts and Symbols of the 18th Century in Europe (CSE)	1994-1997	B, CH, D, DK, F, FIN, I, N, NL, S, UK	SCH
The Evolution of Chemistry in Europe 1789-1939 (HIOC)	1993-1997	B, CH, D, DK, F, FIN, I, IRL, NL, S	SCH
Individual and Society in the Mediterranean Muslim World (ISMM)	1996-1999	A, B, CH, D, DK, E, F, FIN, N, NL, S, TR, UK	SCH
The Transformation of the Roman World (TRW)	1993-1997	A, B, CH, D, DK, E, FIN, I, IRL, N, NL, PL, S, UK	SCH

Social sciences

Programmes	Duration	Supported for whole or part of duration by Member Organisations from:	Affiliation*
Blueprint for a European Social Survey (ESS)	1997	A, B, CH, D, DK, E, FIN, I, IRL, N, NL, P, PL, S, TR, UK	SCSS
European Management and Organisations in Transition (EMOT)	1993-1997	CH, D, DK, F, FIN, I, IRL, N, NL, S, UK	SCSS
Geographic Information Systems: data integration and data base design (GISDATA)	1993-1997	A, B, CH, D, DK, F, GR, I, IRL, N, NL, P, S, UK	SCSS
Learning in Humans and Machines (LHM)	1994-1997	B, CH, D, DK, F, FIN, NL, S, UK	SCSS
Tackling Environmental Resource Management (TERM)	1995-1997	B, CH, D, DK, E, F, FIN, I, N, NL, S, UK	SCSS

* Transdisciplinary programmes are listed here under the principal disciplinary area

Scientific networks

ESF networks bring together scientists to explore the potential of developing and carrying out research at a European level. Interdisciplinarity is encouraged. Usually relatively short-term, networks may lead to proposals for research programmes. The following pages give details of the scientific networks and their co-ordination committees being supported by the ESF in 1996 and of the new networks commissioned during the year.

For further information about the Network Scheme contact:
ESF Network Coordinator: **A E S Mayer**
ESF Contact: **I May**
Tel: +33 (0)3 88 76 71 46
Email: networks@esf.org

Medical sciences

Cell Stress Genes and their Protein Products

1993-1996

Studies of cell stress genes and their protein products cover phenomena from bacteria to man. Many disparate subjects, including autoimmunity and neurodegenerative diseases are topics of this network.

R J Mayer (Co-Chairman) *United Kingdom*
B Maresca (Co-Chairman) *Italy*
P M Kloetzel (Secretary) *Germany*
P Arrigo *France*
O Bensaude *France*
C Georgopoulos *Switzerland*
K Hendil *Denmark*
A Leone *Italy*
C Rodrigues-Pousada *Portugal*
G Santoro *Italy*
ESF Scientific Secretary: **I Wünning**
ESF Contact: **B Schaller**
Tel: +33 (0)3 88 76 71 18
Email: bschaller@esf.org

Databases of Gene Expression during Mammalian Development

1993-1997

With the application of the techniques of molecular genetics there has been an explosion of data on the relationship between gene expression and the development of mammalian embryos. Together with centres in Greece, Germany, France, Finland and the Netherlands, the MRC Human Genetics Unit (UK) is developing an interactive textual and graphic database.

J Bard (Chairman) *United Kingdom*
F Verbeek (Secretary) *The Netherlands*
F Afrati *Greece*
R Baldock *United Kingdom*
E Boncinelli *Italy*
D Davidson *United Kingdom*
B Foehring *Germany*
M Gulisano *Italy*
M H Kaufman *United Kingdom*
T Kavalieros *Greece*
W Lammer *The Netherlands*
K Lawson *The Netherlands*
M Mark *France*
G Muller *Austria*
T Pexieder *Switzerland*
P Rigby *United Kingdom*
K Schughart *Germany*
J Streicher *Austria*
I Thesleff *Finland*
J L Vonesch *France*
D Wilkinson *United Kingdom*
ESF Scientific Secretary: **I Wünning**
ESF Contact: **B Schaller**
Tel: +33 (0)3 88 76 71 18
Email: bschaller@esf.org

HLA and Allergy

1992-1996

Human immune response has been studied from immunological disorders. Recombinant DNA technology has made possible the study of allergic response at the cellular and molecular level. This network enables European laboratories to coordinate research into the role of HLA - Human Leukocyte Antigen - genes in the control of human response to allergens.

M Ricci (Chairman) *Italy*
A Ruffilli (Scientific Secretary) *Italy*
D Charron *France*
M L Kapsenberg *The Netherlands*
D Kraft *Austria*
J Kuehr *Germany*
H Lowenstein *Denmark*
R E O'Hehir *United Kingdom*
G Peltre *France*
A Svejgaard *Denmark*
ESF Scientific Secretary: **I Wünning**
ESF Contact: **B Schaller**
Tel: +33 (0)3 88 76 71 18
Email: bschaller@esf.org

Life and environmental sciences

European-African Songbird Migration

1993-1997

This network creates a coherent European project to study songbirds migrating from Northern Europe to Western Africa. Research centres in 17 European countries have agreed to focus their research on a selected list of 'key species' and to use standardised methods in order to gain substantial insight into migratory strategies of songbirds.

F Bairlein (Chairman) *Germany*
P Berthold *Germany*
J Calderón *Spain*
A Hedenström *Sweden*
L Jenni *Switzerland*
A van Noordwijk *The Netherlands*
W Peach *United Kingdom*
S Rumsey *United Kingdom*
F Spina *Italy*
ESF Scientific Secretary: **A Moth Wiklund**
ESF Contacts: **C Lobstein/J Dalton**
Tel: +33 (0)3 88 76 71 21
Email: clobstein@esf.org

Fishes of the Antarctic Ocean

1994-1997

In the study of Antarctic fish, a wealth of aspects are relevant to the understanding of the evolution and function of physiological, biochemical and ecological adaptations to extreme living conditions.

G di Prisco (Co-Chairman) *Italy*
A Clarke (Co-Chairman) *United Kingdom*
E Pisano (Secretary) *Italy*
S E Fevolden *Norway*
C Gerday *Belgium*
G Hubold *Germany*
J-C Hureau *France*
A Neyelov *Russia*
K Skora *Poland*
R E Weber *Denmark*
ESF Scientific Secretary: **A Moth Wiklund**
ESF Contacts: **C Lobstein/J Dalton**
Tel: +33 (0)3 88 76 71 21
Email: clobstein@esf.org

Fossil Insects

1996-1999

The large number of fossil insects collected in Europe during recent years led to the establishment of this Network, which aims to unite Europe's palaeoentomological community within a common research framework. The network intends to establish a database providing access via the Internet to information about collections, insect bearing localities and publications.

J-C Gall (Chairman) *France*
R Willmann (Vice-Chairman) *Germany*
E A Jarzembowski (Secretary) *United Kingdom*
O E Heie *Denmark*
J Koteja *Poland*
D M Martill *United Kingdom*
X Martinez-Delclòs *Spain*
A Nel *France*
V V Zherikhin *Russia*
Observer
B David *France*
ESF Scientific Secretary: **A Moth Wiklund**
ESF Contact: **J Dalton**
Tel: +33 (0)3 88 76 71 22
Email: jdalton@esf.org

Hominoid Evolution and Environmental Change in the Neogene of Europe

1995-1998

This network focuses on the environmental changes that forced the evolution of the European hominids during the late Neogene period between 14 million and five million years ago. The great apes - i.e. chimpanzees, orangutans, and gorillas - along with the hominids, evolved from their common ancestors during the late Neogene, yet until recently European studies and fossils had made relatively little contribution to worldwide knowledge of this period of hominoid evolution.

J Agusti (Chairman) *Spain*
M Fortelius (Secretary) *Finland*
P Andrews *United Kingdom*
L de Bonis *France*
J L Franzen *Germany*
L Kordos *Hungary*
D Pilbeam *United States*
L Rook *Italy*
N J Shackleton *United Kingdom*
ESF Scientific Secretary: **A Moth Wiklund**
ESF Contacts: **C Lobstein/J Dalton**
Tel: +33 (0)3 88 76 71 21
Email: clobstein@esf.org

Molecular Biology and Ecology of Plasmid-mediated Gene Spread

1994-1997

Bacterial plasmids are important agents of genetic exchange and their study is vital both for emerging genetic engineering techniques and for better understanding of how microbial populations evolved. This network aims to encourage greater communication and exchange of ideas between these laboratories, and in particular to bring the two main groups of scientists working in the field - microbial ecologists, and molecular biologists - closer together.

M Espinosa (Chairman) *Spain*
E M Wellington (Deputy Chairman) *United Kingdom*
C M Thomas (Secretary) *United Kingdom*
M Couturier *Belgium*
S Molin *Denmark*
E Lanka *Germany*
P J J Hooykaas *The Netherlands*
J D Van Elsas *The Netherlands*
ESF Scientific Secretary: **A Moth Wiklund**
ESF Contacts: **C Lobstein/J Dalton**
Tel: +33 (0)3 88 76 71 21
Email: clobstein@esf.org

Systematic Biology

1994-1997

Species of animals, plants and micro-organisms are disappearing at an alarming rate as a result of human activities, and it is a race against time to classify them and determine their potential usefulness. This network aims to provide a platform for Europe's contribution to this issue by helping to unite European research in the field.

S Blackmore (Chairman) *United Kingdom*
N Donlon (Secretary) *United Kingdom*
P Alberch *Spain*
K Bremer *Sweden*
W Los *The Netherlands*
C Nauman *Germany*
B Øllgard *Denmark*
G Pinna *Italy*
S Tillier *France*
P Trojan *Poland*
M Türkay *Germany*
M Vincx *Belgium*
R Wehner *Switzerland*

Observers
J Busby *Australia*
R Gamez *Costa Rica*
D V Geltman *Russia*
P Raven *USA*
S Wirjoatmodjo *Indonesia*

ESF Scientific Secretary: **A Moth Wiklund**
ESF Contacts: **C Lobstein/J Dalton**
Tel: +33 (0)3 88 76 71 21
Email: clobstein@esf.org

Physical and engineering sciences

Catalytic Membrane Reactors

1994-1997

Catalytic membrane reactors (CMRs) could revolutionise the chemical industry through their ability to perform reactions, and the separation of products produced by the reactions, at the same time. They also have great potential in the biotechnology and pharmaceutical industries. This network aims to increase the pace of European research in this important but immature field by encouraging ideas and people to circulate among the member laboratories.

E Drioli (Chairman) *Italy*
R-D Behling *Germany*
R Bredesen *Norway*
L Cot *France*
J-A Dalmon *France*
R Hughes *United Kingdom*
Z R Ismagilov *Russia* (from June 96)
M Morbidelli *Italy/Switzerland*
H Strathmann *The Netherlands*
K I Zamarev *Russia* (deceased June 96)

ESF Scientific Secretary: **H U Karow**
ESF Contact: **C Werner**
Tel: +33 (0)3 88 76 71 28
Email: cwerner@esf.org

Converging Computing Methodologies in Astronomy

1995-1997

Astronomy now relies on a wide range of computing techniques to deal with increasingly large images and data sets. The aim of this network is to unite these techniques within a common framework for collecting, analysing, storing and publishing astronomical data. This will be done by harmonising and coordinating different European research activities in the relevant computing fields, leading towards a consolidated rather than piecemeal approach to astronomical computing.

M C Maccarone (Chairman) *Italy*
F Murtagh (Scientific Secretary) *United Kingdom*
A Bijaoui *France*
V di Gesu *Italy*
A Heck *France*
M J Kurtz *United States*
P Linde *Sweden*
R Molina *Spain*
E Raimond *The Netherlands*

ESF Scientific Secretary: **H U Karow**
ESF Contact: **M Clifford**
Tel: +33 (0)3 88 76 71 07
Email: pesc@esf.org

Electroluminescence in Silicon

1995-1997

Silicon is already widely used throughout the information and communication industries, but its optical performance is poor. The use of a porous form of silicon has achieved significant enhancement, and this network aims to build on these developments at a European level.

B Hamilton (Chairman) *United Kingdom*
A Andrianov *Russia*
R Herino *France*
J Kelly *The Netherlands*
W Lang *Germany*
J McGilp *Ireland*
S Ossicini *Italy*

ESF Scientific Secretary: **H U Karow**
ESF Contact: **P Cosgrove**
Tel: +33 (0)3 88 76 71 06
Email: pcosgrove@esf.org

Oxide Crystals

1994-1997

The network is aimed at an intensive information exchange and coordinated interdisciplinary research in the fields of oxide crystals with relevance to possible new applications for some top priority materials. The collaborators merge fundamental solid state physics and chemistry expertise as well as a wide range of instrumental tools to understand and solve scientific-technical materials problems of oxide crystals. Training of young researchers is another essential aim of the network.

G Corradi (Chairman) *Hungary*
M Wöhlecke (Secretary) *Germany*
F Agulló-López *Spain*
R Capelletti *Italy*
M D Fontana *France*
D Schoemaker *Belgium*
J C Soares *Portugal*
P D Townsend *United Kingdom*

ESF Scientific Secretary: **H U Karow**
ESF Contact: **C Werner**
Tel: +33 (0)3 88 76 71 28
Email: cwerner@esf.org

Humanities

The Convergence and Divergence of Dialects in a Changing Europe

1996-1998

This network is bringing together linguists throughout Europe to study how social, cultural and political changes are affecting traditional dialects in two specific ways: in some cases dialects are *converging* towards each other or towards the standard language of a nation, but in other cases there is *divergence*. The aim is to take a rigorous, scholarly approach to the study of these two types of dialect change, to coordinate existing research in the different countries, and possibly spawn new international collaborations.

P Auer (Co-Chairman) *Germany*
F Hinskens (Co-Chairman) *The Netherlands*
W Dressler *Austria*
W Haas *Switzerland*
A Hagen *The Netherlands*
J Kallen *Ireland*
P Kerswill *United Kingdom*
K Mattheier *Germany*
I Pedersen *Denmark*
A Sobrero *Italy*
J Taeldeman *Belgium*
M Thelander *Sweden*
J Villena Ponsoda *Spain*

ESF Scientific Secretary: **V Lepistö-Kirsilä**
ESF Contact: **J Freshwater**
Tel: +33 (0)3 88 76 71 26
Email: humanities@esf.org

National Socialist Occupation Policy

1994-1997

This network aims to deepen our understanding of the period concerned by analysing gaps in current research, and taking account of new historical sources that have recently come to light in the former Soviet Union. The ultimate goal is to promote a more coherent international base for work that is still predominantly fragmented into national research projects that each have different perspectives.

W Benz (Chairman) *Germany*
J Th M Bank (Secretary) *The Netherlands*
F Bédarida *France*
W Dlugoborski *Poland*
H Fleischer *Greece*
H Graml *Germany*
R Hilberg *United States*
G Otto *Germany*
R J Overy *United Kingdom*
P Sipos *Hungary*
J H Ten Cate *The Netherlands*
A Trommer *Denmark*
E Weinzierl *Austria*

ESF Scientific Secretary: **V Lepistö-Kirsilä**
ESF Contact: **J Freshwater**
Tel: +33 (0)3 88 76 71 26
Email: humanities@esf.org

Republicanism: a shared European heritage

1995-1998

The network studies the republican tradition as an invaluable resource in both institutional and moral or cultural terms. In addition to its historical research the network will address the question of the relevance of republicanism for contemporary political debates in Europe. The exploration of the institutional means by which civil liberty can be rendered consistent with political authority, of how citizens may meaningfully participate in their own government and of how political communities safeguard their own identity has comprised the institutional agenda of republicanism since classical Greek and Roman times.

Q Skinner (Chairman) *United Kingdom*
M van Gelderen (Secretary)
United Kingdom
C Larrère *France*
H-E Bödecker *Germany*
I Comparato *Italy*
I Hampsher-Monk *United Kingdom*

ESF Scientific Secretary: **V Lepistö-Kirsilä**
ESF Contact: **J Freshwater**
Tel: +33 (0)3 88 76 71 26
Email: humanities@esf.org

Science and the Visual Image: 1500-1800

1996-1999

This network aims to develop a new understanding of the interplay between art and science by studying visual images and items used to demonstrate and publicise the great discoveries made in Europe during the golden age of science from 1500 to 1800. A major objective is to break down the rigid barriers that have been drawn between art and science, and show how each benefited from the other.

W Shea (Chairman) *France*
A Aeschlimann *Switzerland*
S G W de Clercq *The Netherlands*
T Frängsmyr *Sweden*
P Galluzzi *Italy*
M Grmek *France*
R Halleux *Belgium*
M Kemp *United Kingdom*
J Renn *Germany*
W Tega *Italy*

ESF Scientific Secretary: **G Darmon**
ESF Contacts: **C Lobstein/J Dalton**
Tel: +33 (0)3 88 76 71 21
Email: clobstein@esf.org

Social sciences

Gender Inequality and the European Regions

1994-1997

This network is providing a European dimension to the study of gender inequality and the changing role of women in society, taking account of the topic's complexity and regional variety. The aim is to provide a solid theoretical and conceptual underpinning for the development of comparative gender studies in Europe.

S Duncan (Chair) *United Kingdom*
B Pfau-Effinger (Secretary) *Germany*
E Aufhauser *Austria*
L Gonäs *Sweden*
N Kyriazis *Greece*
D Perrons *United Kingdom*
M Solsona *Spain*
S Walby *United Kingdom*

ESF Scientific Secretary: **J H Smith**
ESF Contact: **P Cosgrove**
Tel: +33 (0)3 88 76 71 06
Email: pcosgrove@esf.org

Political-Economic Dimensions of Enlargement and New Membership of the European Union

1996-1998

This network aims to answer basic questions such as the extent to which enlargement of the European Union will affect European integration, and how some of the disadvantages of admitting new members can be overcome by changing European Union institutions. This will be accomplished by developing new theories of institutional change, and at the same time enhancing understanding of the extent to which the entry of new countries induces such change.

B Steunenberg (Chairman) *The Netherlands*
J Bacaria *Spain*
S Berg *Sweden*
P Dunleavy *United Kingdom*
D da Empoli *Italy*
B S Frey *Switzerland*
A Inotai *Hungary*
J-E Lane *Norway*
D Schmidtchen *Germany*
F Schneider *Austria*
H Weck-Hannemann *Austria*
ESF Scientific Secretary: **J H Smith**
ESF Contact: **C Mabrouk**
Tel: +33 (0)3 88 76 71 31
Email: scss@esf.org

Social Transformations in Central and Eastern Europe

1994-1998

The rapid and historically unique social transformations currently underway in eastern Europe are already the subjects of much research. This network intends to create a structure in which questions, theories, methods of observation, and results can be confronted and compared. A particular aim is to foster close collaboration between researchers in western and eastern Europe.

W Adamski (Co-Chairman) *Poland*
M Dobry (Co-Chairman) *France*
M Baethge *Germany*
B Greskovits *Hungary*
M Illner *Czech Republic*
D Lane *United Kingdom*
M Morlino *Italy*
I Papadopoulos *Greece*
H van der Wusten *The Netherlands*
ESF Scientific Secretary: **J H Smith**
ESF Contact: **C Mabrouk**
Tel: +33 (0)3 88 76 71 31
Email: scss@esf.org

Transitions in Youth

1993-1996

The main focus in studying the transitions of young people as they progress towards adulthood is on the transition from education to the labour market.
Other transitions may be new family status or independent households. The network is a catalyst stimulating comparative resarch both in terms of theory and cross-national survey analysis.

D Raffe (Chairman) *United Kingdom*
J Planas (Secretary) *Spain*
R Breen *United Kingdom*
D Hannan *Ireland*
W Müller *Germany*
H Rutjes *The Netherlands*
P Werquin *France*
ESF Scientific Secretary: **J H Smith**
ESF Contact: **P Cosgrove**
Tel: +33 (0)3 88 76 71 06
Email: pcosgrove@esf.org

Standing Committee for the Social Sciences Exploratory Grant Scheme 1996

The following grants were awarded in 1996

Employment and Social Security Systems

Basic income in Europe
I Ostner
(Project leader - *Institut für Sozialpolitik, Georg-August-Universität Göttingen, D)*

Labor force participation trends and social security reforms in Europe
F Peracchi
(Project leader - *Instituto Flores de Lemus, Carlos III University, Madrid, E)*

Social, Economic and Political Implications of the Development of Digital Technology

The impact of new media technologies on children: a European comparative study
G Gaskell and S Livingstone
(Project leaders - *The Media Research Group, Department of Social Psychology, London School of Economics, UK)*

The effects of digital information and communication technology on the labour process and labour relations in the entertainment and media industries
P Leisink
(Project leader - *Utrecht University, Faculty of Social Sciences, Netherlands School for Social and Economic Policy Research, NL)*

Informal Economy, Crime and Social Order

The informal economy: threat and opportunity in the city
J Shapland
(Project leader - *Centre for Criminological and Legal ResearchUniversity of Sheffield, Sept. of Law, UK)*

Europe and European economic crime
A Doig
(Project leader - *Liverpool Business School, Liverpool John Moores University, UK)*

Open Element

The transformation of political representation in Europe. Parliamentary elites (1849-1998)
M Cotta
(Project leader - *Dipto di Scienze Storiche, Giuridiche, Politiche e Sociali, Università di Siena, I)*

Social representations and attitudes about Gypsies: a European cross-countries study
J A Perez
(Project leader - *Facultad de Psicologia, University of Valencia, E)*

Scientific networks at a glance

ESF scientific networks are supported by the Basic Budget to which all Member Organisations contribute.

Medical sciences

Networks	Duration	Affiliation*
Cell Stress Genes and their Protein Products	1993-1996	EMRC
Databases of Gene Expression during Mammalian Development	1993-1997	EMRC/LESC
HLA and Allergy	1992-1996	EMRC

Life and environmental sciences

Networks	Duration	Affiliation*
European-African Songbird Migration	1993-1997	LESC
Fishes of the Antarctic Ocean	1994-1997	LESC
Fossil Insects	1996-1999	LESC
Hominoid Evolution and Environmental Change in the Neogene of Europe	1995-1998	LESC
Molecular Biology and Ecology of Plasmid-mediated Gene Spread	1994-1997	LESC/EMRC
Systematic Biology	1994-1997	LESC

Physical and engineering sciences

Networks	Duration	Affiliation*
Catalytic Membrane Reactors	1994-1997	PESC
Converging Computing Methodologies in Astronomy	1995-1997	PESC
Electroluminescence in Silicon	1995-1997	PESC
Oxide Crystals	1994-1997	PESC

Humanities

Networks	Duration	Affiliation*
The Convergence and Divergence of Dialects in a Changing Europe	1996-1998	SCH
National Socialist Occupation Policy	1994-1997	SCH
Republicanism: a shared European heritage	1995-1998	SCH
Science and the Visual Image: 1500-1800	1996-1999	SCH

Social sciences

Networks	Duration	Affiliation*
Gender Inequality and the European Regions	1994-1997	SCSS
Political-Economic Dimensions of Enlargement and New Membership of the European Union	1996-1998	SCSS
Social Transformations in Central and Eastern Europe	1994-1998	SCSS
Transitions in Youth	1993-1996	SCSS

* Transdisciplinary networks are listed here under the principal disciplinary area

European research conferences in 1996

European Research Conferences (EURESCO) provide a platform for high-level discussions of scientific issues, with opportunities for younger scientists to get involved.

Mathematics

- **Mathematical Methods in Industrial Problems: Mathematical and Numerical Models for the Simulation of Turbulent and Reactive Flows,** A. Quarteroni (Milano) - Mt S^{te} Odile (near Strasbourg), France, 16-21 February
- **Algebra and Discrete Mathematics: Group Theory: Finite to Infinite,** L. Babai (Budapest) - Castelvecchio Pascoli, Italy, 13-18 July

Physics

- **Solid/Fluid Interfaces: Wetting and Capillarity,** A.M. Cazabat (Paris) - Aghia Pelaghia, Crete, Greece, 22-27 March
- **Fundamental Aspects of Surface Science: Semiconductor Surfaces,** C. Sebenne (Paris) - Blankenberge, Belgium, 7-11 June
- **Advanced Quantum Field Theory (in memory of Claude Itzykson),** V. Rittenberg (Bonn) - La Londe les Maures, France, 31 August-5 September
- **Quantum Optics,** K. Burnett (Oxford) - Castelvecchio Pascoli, Italy, 21-26 September
- **Nuclear Physics: Chaotic Phenomena in Nuclear Physics,** S. Aberg (Lund) - Aghia Pelaghia, Crete, Greece, 28 September-3 October

Materials

- **Physical Metallurgy: Interfacial Engineering in Materials,** E.D. Hondros (London) - Castelvecchio Pascoli, Italy, 9-14 October

Chemistry

- **Stereochemistry,** F. Diederich (Zurich) - Bürgenstock, Switzerland, 28 April-4 May
- **Metal Clusters in Chemistry,** A. Simon (Stuttgart) - Mt S^{te} Odile (near Strasbourg), France, 2-7 May
- **Molecular & Ionic Clusters.** U. Buck (Göttingen) & M. Johnson (Yale) - Castelvecchio Pascoli, Italy, 5-10 May
- **Supramolecular Chemistry: Molecular Recognition and Drug-Receptor Interactions,** J. de Mendoza (Madrid) - Salamanca, Spain, 29 August-3 September
- **Inorganic Chemistry,** H. Toftlund (Odense) - Karrebaeksminde, Denmark, 6-11 September
- **Reactivity in Organized Microstructures: Chemical Reactions and Physical Processes in Compartmentalized Systems,** M.A. Lopez-Quintela (Santiago de Compostela) - Santiago de Compostela, Spain, 10-15 September
- **Molten Salts,** V. Danek (Bratislava) - Smolenice (near Bratislava), Slovakia, 15-20 September

Life Sciences

- **Neural Mechanisms of Learning and Memory: Modulation of the Trace,** W.H. Gispen (Utrecht) - San Feliu de Guixols, Spain, 16-21 April
- **Developmental Biology: Pattern Formation in Animals,** H. Jäckle (Göttingen) - Lenggries, Germany, 15-20 June
- **Gene Transcription in Yeast: Role of Chromatin and Transcription Factors,** C. P. Hollenberg (Düsseldorf) - Acquafredda di Maratea, Italy, 21-26 June
- **Bioseparation,** C.R. Lowe (Cambridge) - Lunteren, The Netherlands, 12-17 September
- **Biophysics of Photosynthesis: Primary Processes of Photosynthesis,** G. Renger (Berlin), Sitges, Spain, 5-10 October
- **Self-Nonself Discrimination: Molecular Basis of Autoaggression,** B. Arnold (Heidelberg) - Lenggries, Germany, 11-15 October

Biomedicine & Health

- **Therapeutic Immunomodulation: Therapeutic Induction of Tolerance,** H. Waldmann (Cambridge) - Blankenberge, Belgium, 31 August-4 September
- **Immunology of Infections: Oral and Other Mucosal Vaccines,** J. Holmgren (Göteborg) - Giens (near Toulon), France, 11-16 October
- **Molecular Pathogenesis of Infectious Diseases: Respiratory Tract Infections,** C. Swanborg (Lund) - Obernai, France, 8-12 November

Geosciences & Environment

- **Natural and Anthropogenically Induced Hazards: Large Earthquakes in the Geological Record,** G. Valensise (Roma) - Corinth, Greece, 18-24 May
- **Alluvial Basins: Quantitative Estimation of Sediment Supply, Accomodation and Loss,** P.F. Friend (Cambridge) - Giens (near Toulon), France, 13-18 September
- **Space-Time Modelling of Bounded Natural Domains: Intelligent Tools for 3D-Interpolation and Correlation,** H.H. Voss (Hannover) - Canterbury, United Kingdom, 13-18 September
- **Natural Waters and Water Technology: Water Treatment Processes,** M.J. Hudson (Reading) - Aghia Pelaghia, Crete, Greece, 25-30 October
- **Geochemistry of Crustal Fluids,** K.V. Ragnarsdottir (Bristol) - Seefeld, Austria, 6-11 December

Social Sciences

- **European Societies or European Society?: Social Exclusion and Social Integration in Europe: Theoretical and Policy Perspectives on Poverty,** R. Erikson (Stockholm) - Blarney, Ireland, 26-31 March
- **Migration and Development: Migration, Development and Policy,** T.J. Hatton (Colchester) - Mt Ste Odile (near Strasbourg), France, 31 May-5 June

Humanities

- **Development of Sensory, Motor and Cognitive Abilities in Early Infancy: Antecedents of Language and Symbolic Cognitive Functions,** G. Butterworth (Brighton) - San Feliu de Guixols, Spain, 10-15 April
- **The Structure of Learner Language,** W. Klein (Nijmegen) - Espinho, Portugal, 20-25 September

For a copy of the 1997 Conference programme and application forms, contact the Head of the EURESCO Unit:
Dr J Hendekovic
Tel: +33 (0)3 88 76 71 35
Fax: +33 (0)3 88 36 69 87
Email: euresco@esf.org
On-line information and application on www server:
http://www.esf.org/euresco

ESF publications in 1996

The ESF disseminates information about its activities through a variety of channels, including a wide range of publications, from reports to *ESF Communications*, the Foundation's biannual journal. Listed here are a selection of publications resulting from ESF activity in 1996. Up-to-date information on the Foundation's activities is also available at its World Wide Web site (http://www.esf.org) which now contains more than 700 pages and is receiving more than 190,000 'hits' (pages read) each month.

Corporate publications

About the ESF, 1997
36 pp. brochure
Published by the European Science Foundation, Strasbourg, France, 1997

Annual Report 1995
79 pp. ISBN 2-903148-85-6
Published by the European Science Foundation, Strasbourg, France, 1996

Beyond Framework Programme IV Parts 1 & 2
An ESF Position Paper
Part 1, 50 pp. ISBN 2-903148-86-4
Part 2, 153 pp. ISBN 2-903148-86-4
Published by the European Science Foundation, Strasbourg, France, 1996

Scientific Networks
A guide.
Published by the European Science Foundation, Strasbourg, France, 1996

Medical sciences

European Medical Research
The newsletter of the European Medical Research Councils
8 pp. Issues 1 and 2
Published by the European Science Foundation, Strasbourg, France, 1996

Life and environmental sciences

Greenland Ice Core Project (GRIP)

Greenland Ice Core Project (GRIP) -
Final Report
40 pp. ISBN 2-903148-84-8
Published for ESF and the European Commission DGXII by the European Science Foundation, Strasbourg, France, 1996

ESF Consortium for Ocean Drilling (ECOD)

The Ocean Drilling Program (ODP) and the ESF Consortium for Ocean Drilling (ECOD) – into the 21st Century
Interim Report on 1992-1996 Activity
128 pp. ISBN 2-903148-87-2
Published by the European Science Foundation, Strasbourg, France, 1996

Europrobe

Lithosphere Dynamics: Origin and Evolution of Continents
Edited by D G Gee and H J Zeyen
138 pp. ISBN 2-903 148-91-0
EUROPROBE Secretariat, Uppsala University, 1996

European Ice Sheet Modelling Initiative (EISMINT)

Annals of Glaciology vol 23,
Papers from the International Symposium on Ice Sheet Modelling held in Chamonix, France, 18-22 September 1995
410 pp. Edited by K Hutter (chief editor), J Determann, A C Fowler, R C A Hindmarsh, A Jenkins and A Ohmura (associated editors)
International Glaciological Society, 1996

European Palaeoclimate and Man (EPC)

Holocene Treeline Oscillations, Dendrochronology and Palaeoclimate
Edited by B Frenzel
Co-editors H H Birks, T Alm and K D Vorren
303 pp. ISBN 3-437-25386-7,
US-ISBN 1-56081-447-0, ISSN 0930-4673
Paläoklimaforschung Vol 13, Gustav Fischer Verlag, Stuttgart, Germany, 1996

European Marine and Polar Science

EMaPS Annual Report 1996
16 pp. ESF/EMaPS,
Strasbourg, France, 1997

Mediterranean Forecasting: Grand Challenges for European Cooperation in Forecasting the Behaviour and Characteristics of the Oceans
80 pp. European Science Foundation
Strasbourg, France 1996

Physical and engineering sciences

Framework Studies into Large Research Facilities

Scientific Prospects for Neutron Scattering with Present and Future Sources
154 pp. ISBN 2-9031 48-90-2
European Science Foundation / European Neutron Scattering Association,
Strasbourg, France, 1996

Humanities

Transformation of the Roman World (TRW)

The Transformation of the Roman World
ISBN 0-7141-0585-6 £18.99
Edited by L Webster, M Brown
British Museum Press, London, UK

The Evolution of Chemistry in Europe 1789-1939 (HIOC)

Strategies of Chemical Industrialization from Lavoisier to Bessemer
Proceedings of the workshop, held in Liège on 7 April 1994
Archives Internationales d'Histoire des Sciences Vol. 46/1996
Istituto della Enciclopedia Italiana Fondata da Giovanni Treccani

The Mineral Chemistry Laboratory of the Polytechnic School of Lisbon (1884-1894)
ISBN 972-592-096-1
Edited by A L Janeira, M E Maia, P Pereira
Livraria Escolar Editora,
Lisboa, Portugal, 1996

Origins of the Modern State in Europe, 13th-18th Centuries

Power Elites and State Building
ISBN 0-19-820547-3
Edited by W Reinhard
Oxford University Press, United Kingdom

Palaeolithic Occupation of Europe

The Earliest Occupation of Europe
Proceedings of the workshop, held in Tautavel (France) in 1993
Edited by W Roebroeks and T van Kolfschoten
331 pp. ISBN 90-73368-06-5
University of Leiden, 1995

National Socialist Occupation Policy

Anpassung Kollaboration Widerstand: Kollektive Reaktionen auf die Okkupation
Edited by W Benz, J H Ten Cate and G Otto
Metropol Verlag, Berlin, 1996

The Classical Tradition in the Middle Ages and the Renaissance

Classica et Mediaevalia
Edited by K Friis-Jensen, S Isager, M Skafte Jensen, B Munk Olsen and J E Skydsgaard
405 pp. ISBN 87-7289-422-9 ISSN 0106-5815
Museum Tusculanum Press,
University of Copenhagen, 1996

Social sciences

Geographical Information Systems: data integration and database design (GISDATA)

Geographic Objects with Indeterminate Boundaries (GISDATA 2)
Edited by P A Borrough and A U Frank
348 + xx pp. ISBN 0-7484-0386-8
(paperback: ISBN 0-7484-0387-6)
Taylor & Francis Ltd, United Kingdom, 1996

GIS Diffusion: The Adoption and Use of Geographical Information Systems in Local Government in Europe (GISDATA 3)
Edited by I Masser, H Campbell and MCraglia
244 + xx pp. ISBN 0-7484-0494-5)
(paperback: ISBN 0-7484-0495-3)
Taylor & Francis Ltd, United Kingdom, 1996

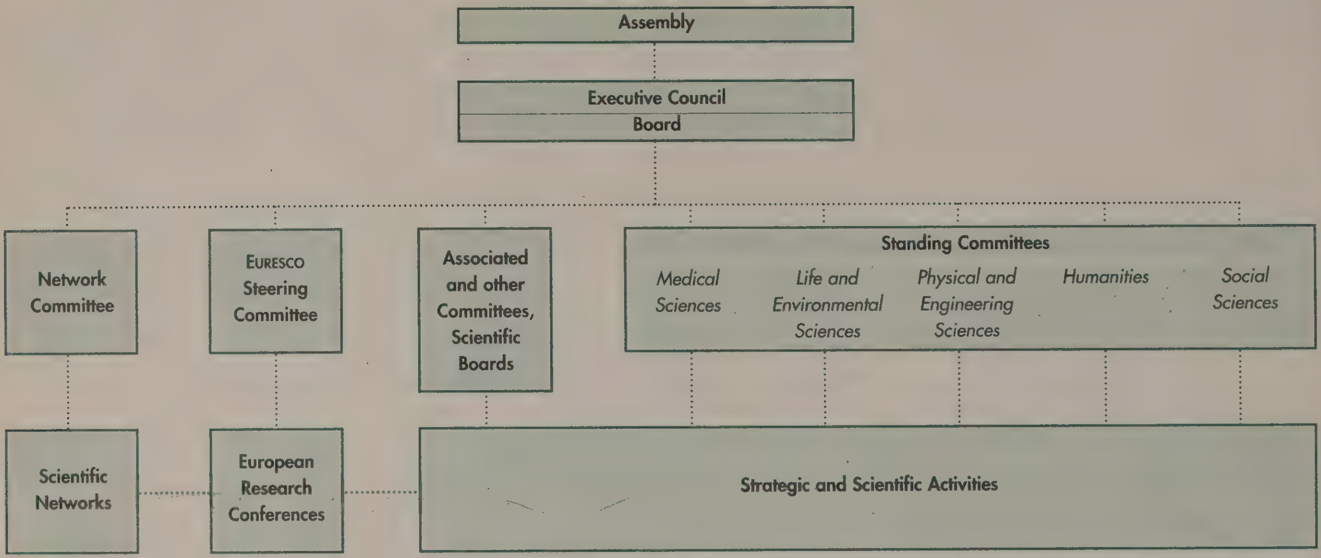
Regional and Urban Restructuring in Europe (RURE)

The Spatial Impact of Economic Changes in Europe
Edited by W Lever and A Bailly
364 + xii pp. ISBN 1-85628-611-8
Avebury/Ashgate Publishing Ltd.
Aldershot, United Kingdom

European Cities in Competition
Edited by C Jensen-Butler, A Shachar and J van Weesep
530 + xvi pp. ISBN 1-85628-610-X
Averbury/Ashgate Publishing Ltd.
Aldershot, United Kingdom

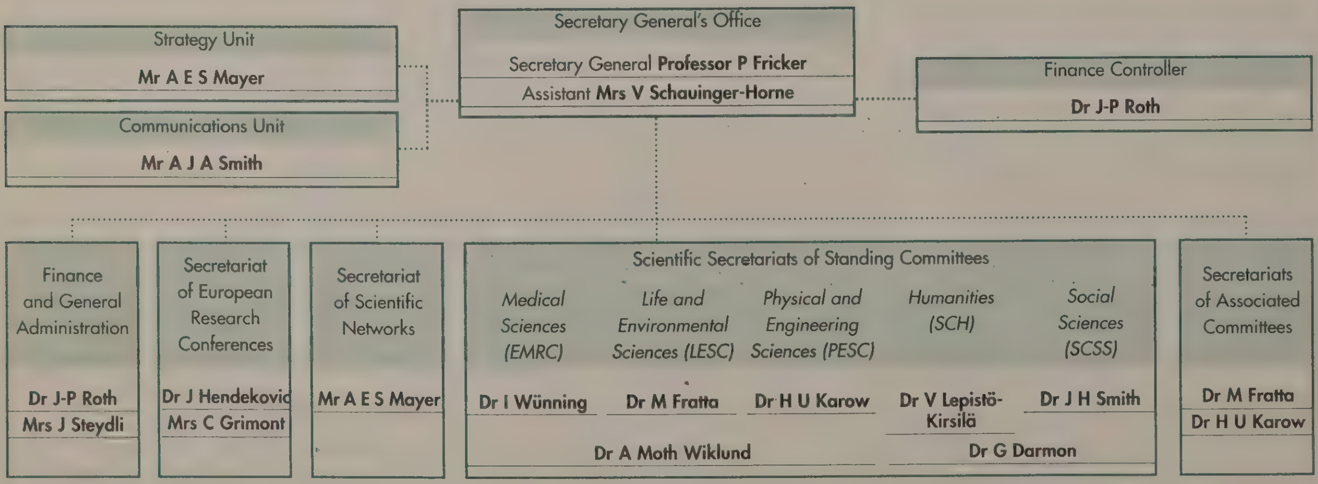
For information on ESF's activities and publications, contact the Communications Unit:
Head of Communications: **A J A Smith**
Publications Officer: **S Schott**
Tel: +33 (0)3 88 76 71 25
Email: communications@esf.org
Information Assistant: **J Martinez**
Tel: +33 (0)3 88 76 71 14
Email: jmartinez@esf.org

ESF structure


Assembly
Executive Council
Board
Network Committee
EURESCO Steering Committee
Associated and other Committees, Scientific Boards
Standing Committees
Medical Sciences
Life and Environmental Sciences
Physical and Engineering Sciences
Humanities
Social Sciences
Scientific Networks
European Research Conferences
Strategic and Scientific Activities

Structure of the ESF office

(senior staff in post as at 1 January 1997)


Strategy Unit
Mr A E S Mayer
Communications Unit
Mr A J A Smith
Secretary General's Office
Secretary General Professor P Fricker
Assistant Mrs V Schauinger-Horne
Finance Controller
Dr J-P Roth
Finance and General Administration
Dr J-P Roth
Mrs J Steydli
Secretariat of European Research Conferences
Dr J Hendekovic
Mrs C Grimont
Secretariat of Scientific Networks
Mr A E S Mayer
Scientific Secretariats of Standing Committees
Medical Sciences (EMRC)
Life and Environmental Sciences (LESC)
Physical and Engineering Sciences (PESC)
Humanities (SCH)
Social Sciences (SCSS)
Dr I Wünning
Dr M Fratta
Dr H U Karow
Dr V Lepistö-Kirsilä
Dr J H Smith
Dr A Moth Wiklund
Dr G Darmon
Secretariats of Associated Committees
Dr M Fratta
Dr H U Karow

Consultants

Dr J-H Kock (Environment and Health) until November 1996
Dr M Sparreboom (Asian Studies)
Mr D Wainwright (Publications) until December 1996

ESF board, executive council and committee membership

(as at 1 January 1997)

In 1996, the ESF's Electoral Commission recommended that Sir Dai Rees (United Kingdom) serve a second three-year term as President of ESF. The Commission also recommended that Professor W Kröll (Germany) serve a second term as Vice-President, that Professor G Björkstrand (Finland) join the Board as a representative of the Executive Council and that the following become members of the Executive Council: Professor P Bosi (Italy), Dr D Drewry (United Kingdom), Professor J Hamori (Hungary) and Professor V Kaucic (Slovenia). These appointments all took effect on 1 January 1997.

Board

D A Rees (President) *United Kingdom*
D M X Donnelly (Vice-President) *Ireland*
W Kröll (Vice-President) *Germany*
L Oro (Vice-President) *Spain*
G Björkstrand *Finland*
G Öquist *Sweden*
P Papon *France*
P Fricker (Secretary General)
Secretary: **V M Schauinger-Horne**

Executive Council

D A Rees (President) *United Kingdom*
D M X Donnelly *Ireland*
W Kröll *Germany*
L Oro *Spain*
G Björkstrand *Finland*
G Öquist *Sweden*
P Papon *France*
P Bosi *Italy*
D J Drewry *United Kingdom*
R J van Duinen *The Netherlands*
S Guðbjarnason *Iceland*
B Halász *Hungary (to Dec 96)*
J Hamori *Hungary*
R B Heap *United Kingdom (to Dec 96)*
H P Hertig *Switzerland*
V Kaucic *Slovenia*
D Kavlie *Norway*
C Kordon *France*
L Kúznicki *Poland*
J Maggiolly Novais *Portugal*
C Mancini *Italy (to Dec 96)*
J Martinussen *Denmark*
H Newby *United Kingdom*
N K Pak *Turkey*
E N Protonotarios *Greece*
H Rauch *Austria*
L Simar *Belgium*
R Simili *Italy*
H Gg Wagner *Germany*
J Routti / A Jacquemin
Representatives of the EC
Secretary: **V M Schauinger-Horne**

Electoral Commission (1996)

P Levaux (Chairman) *Belgium*
G Chiarotti *Italy*
P Collins *United Kingdom*
F R Dias Agudo *Portugal*
A Eggimann *Switzerland*
R Grunwald *Germany*
S Guðbjarnason *Iceland*
B Halász *Hungary*
E Kobal *Slovenia*
K L Komarek *Austria*
J Kornacki *Poland*
B Öhngren *Sweden*
N K Pak *Turkey*
D Pardo *France*
C Pascual *Spain*
K Paunio *Finland*
R S Reneman *The Netherlands*
E Sagarra *Ireland*
I Terp *Denmark*
L Westgaard *Norway*
Representative of NHRF *Greece*
Secretary: **V M Schauinger-Horne**

Ad hoc Committee of the Executive Council on Membership

L Oro (Chairman) *ESF Vice-President*
P Fricker *ESF Secretary General*
B Halász *Hungary (to Dec 96)*
R B Heap *United Kingdom (to Dec 96)*
C Kordon *France*
L Kúznicki *Poland*
B Müller *Germany (to Dec 96)*
H Newby *United Kingdom*
G Öquist *Sweden*
C Schneider *Germany*
Secretary: **A E S Mayer**

Finance Committee

C Pascual (Chairman) *Spain*
G Agricola *Italy*
M Bowthorpe *United Kingdom*
M Dodet *France*
E Glück *Austria*
R Grunwald *Germany*
D Kavlie *Norway*
P Levaux *Belgium*
B Müller *Germany (to April 96)*
P Fricker *ESF Secretary General*
J-P Roth *ESF Finance Officer*

Auditor for financial year 1996

B Werbell *Sweden*

European Medical Research Councils (EMRC)

This Committee consists of ad hoc representatives of those ESF Member Organisations which act as Research Councils concerned with medicine and health.

Ph Lazar (Chairman) *(to Nov 96)*
L Peltonen (Chair) *(from Nov 96)*
ESF Scientific Secretary: **I Wünning**

EMRC Executive Group

Ph Lazar (Chairman) *France (to Nov 96)*
L Peltonen (Chair) *Finland (from Nov 96)*
E Dabelsteen *Denmark*
C Griscelli *France*
A Hofman *The Netherlands*
B Konze-Thomas *Germany*
J Komender *Poland*
G Radda *United Kingdom*
ESF Scientific Secretary: **I Wünning**
ESF Contact: **B Schaller**
Tel: +33 (0)3 88 76 71 18
Email: emrc@esf.org

Standing Committee for Life and Environmental Sciences (LESC)

W Rathmayer (Chairman) *Germany*
C Alzieu *France*
E Augstein *Germany*
K Bremer *Sweden*
G Busuoli *Italy*
T H Clutton-Brock *United Kingdom*
M Clynes *Ireland*
A Coomans *Belgium*
R Dyer *United Kingdom*
T Fagerström *Sweden*
E Fereres *Spain*
G Glatzel *Austria*
F Gubensek *Slovenia*
J Jouzel *France*
J A Korstgaard *Denmark*
I Lang *Hungary*
A Matter *Switzerland*
J-C Mounolou *France*
J W M Osse *The Netherlands*
I Sa-Correia *Portugal*
G Salvatore *Italy*
O Savolainen *Finland*
F A Seifert *Germany*
A M C Sengör *Turkey*
H Thorgeirsson *Iceland*
A Urbanek *Poland*
L Walløe *Norway*
D Weis *Belgium*
D J Drewry *United Kingdom (to Dec 96)*
ESF Executive Council (from Jan 97)
R B Heap *ESF Executive Council (to Dec 96)*
ESF Scientific Secretary: **M Fratta**
ESF Contact: **P Pirra**
Tel: +33 (0)3 88 76 71 29
Email: lesc@esf.org

Standing Committee for the Physical and Engineering Sciences (PESC)

J E Fenstad (Chairman) *Norway*
J-C André (Vice-Chairman) *France*
M A Barbosa *Portugal*
S Bevilacqua *Italy*
P Day *United Kingdom*
J P Desclaux *France*
D M X Donnelly *Ireland*
G Ertl *Germany*
M S Espedal *Norway*
H Gleiter *Germany*
P Goya *Spain*
A S Hauksdóttir *Iceland*
A Kluwick *Austria*
N Kroó *Hungary*
J Langer *Poland*
E Larsen *Denmark*
P Mandel *Belgium*
P Martinoli *Switzerland*
N K Pak *Turkey*
T Pakkanen *Finland*
K A Pounds *United Kingdom*
M Rinaldi *Italy*
J-E Sundgren *Sweden*
F W Sluijter *The Netherlands*
P Swinnerton-Dyer *United Kingdom*
L Vanquickenborne *Belgium*
J Ziv *Israel*
H Rauch *ESF Executive Council*
ESF Scientific Secretary: **H U Karow**
ESF Contact: **M Clifford**
Tel: +33 (0)3 88 76 71 07
Email: pesc@esf.org

Standing Committee for the Humanities (SCH)

W Blockmans (Chairman) *The Netherlands*
J Arce *Spain*
D Barjot *France*
D E D Beales *United Kingdom*
G Björkstrand *Finland*
M Böhler *Switzerland*
I Bondebjerg *Denmark*
M Csáky *Austria*
L Droulia *Greece*
E Fischer-Lichte *Germany*
M Haman *Poland (to March 96)*
B Hansson *Sweden*
D Kosáry *Hungary*
G MacEoin *Ireland (to March 96)*
G Oberhammer *Austria (to March 96)*
M Rindal *Norway*
M H Rocha-Pereira *Portugal*
E Sagarra *Ireland*
S Tabaczynsky *Poland*
A Verhulst *Belgium*
H L Wesseling *The Netherlands*
S Zoppi *Italy*
R Simili *ESF Executive Council*

Subject Representatives
R Halleux *History of Science*
R Ilbert *Islam Studies*
E König *Linguistics*

Observers
S Hackney *National Endowment for the Humanities*
J Jarab *Czech Republic*
R Ris *Conseil International de Philosophie et des Sciences Humaines*
S Shaked *Israel Academy of Sciences and Humanities*
E Steinkellner *Asia Committee*
ESF Scientific Secretary: **V Lepistö-Kirsilä**
ESF Contacts: **J Freshwater/G Schauinger**
Tel: +33 (0)3 88 76 71 26
Email: humanities@esf.org

Standing Committee for the Social Sciences (SCSS)

R Erikson (Chairman) *Sweden*
G Martinotti (Chairman) *Italy (to Dec 96)*
R Amann *United Kingdom*
E Baltensperger *Switzerland*
H Brink *Denmark*
M Dalla Costa *Italy*
F Engelstad *Norway*
J Ferreira de Almeida *Portugal*
H Fisek *Turkey*
H Gaus *Belgium*
M Kaase *Germany*
L Kulcsár *Hungary*
M Laver *Ireland*
L Leontidou *Greece*
M Marin *Finland*
H Matis *Austria*
C Meidinger *France*
J R Montero *Spain*
L G Nilsson *Sweden*
L Paganetto *Italy*
Th Thorlindsson *Iceland*
F Thys-Clement *Belgium*
G A van der Knaap *The Netherlands*
A Wyczanski *Poland*
H Newby *ESF Executive Council*
Observers
S N Eisenstadt *Israel Academy of Sciences and Humanities*
B Bertenthal *National Science Foundation, USA*
E Mochmann *Adviser, Social Science Databases*
B Öhngren *COST Technical Committee, Social Sciences*
K Prewitt *Social Science Research Council, USA*
ESF Scientific Secretary: **J H Smith**
ESF Contact: **C Mabrouk**
Tel: +33 (0)3 88 76 71 31
Email: scss@esf.org

European Research Conferences Steering Committee

H Gg Wagner (Chairman) *Germany*
K Bremer *ESF Standing Committee for Life and Environmental Sciences (LESC)*
E Bayer *European Mathematical Society*
J Biemond *European Association for Signal Processing*
D M X Donnelly *ESF Vice-President*
N N Greenwood *EUCHEM/Federation of European Chemical Societies*
A Hofman *ESF European Medical Research Councils (EMRC)*
H M Keir *European Union of Societies in Experimental Biology*
A Longinelli *European Union of Geoscientists*
P Martinoli *ESF Standing Committee for the Physical and Engineering Sciences (PESC)*
K Newton *ESF Standing Committee for Social Sciences (SCSS)*
L Peltonen *ESF European Medical Research Councils (EMRC)*
R Pick *European Physical Society*
A Verhulst *ESF Standing Committee for the Humanities (SCH).*
Guests
C Brézin Philippe *Laudat Conferences*
D G Crighton *European Mechanics Society*
A Jacquemin-Sablon *Jacques Monod Conferences*
J Rosenbaum *European Commission*
E P Whitehead *European Commission*
ESF Office:
J Hendekovic *Head of EURESCO Unit*
C Grimont *Conference Manager*
ESF Contact: **V Allspach**
Tel: +33 (0)3 88 76 71 35
Email: euresco@esf.org

EURESCO Review Panel

R B Heap (Chairman) *United Kingdom*
D M X Donnelly *Ireland*
R Erikson *Sweden*
H P Hertig *Switzerland*
W Hutter *The Netherlands*
C Kordon *France*
C Pascual *Belgium*
H Walther *Germany*
Consultant
J Gunning *United Kingdom*
J Hendekovic *ESF*
J-P Roth *ESF*

Network Committee

A Committee of the Executive Council set up to manage the network operations, and to make recommendations to Council on network launches.

D M X Donnelly (Chairman) *Ireland*
W P Blockmans *The Netherlands, SCH*
J E Fenstad *Norway, PESC*
R Erikson *Sweden, SCSS*
B Halász *Hungary (to Dec 96)*
H P Hertig *Switzerland*
P Lazar *France, EMRC (to Dec 96)*
G Martinotti *Italy, SCSS (to Dec 96)*
L Peltonen *Finland, EMRC*
W Rathmayer *Germany, LESC*
H Gg Wagner *Germany*
Secretary: **A E S Mayer**
ESF Contact: **I May**
Tel: +33 (0)3 88 76 71 46
Email: networks@esf.org

Network Review Panel

T D Spearman (Chairman) *Ireland*
E Allardt *Finland*
H Ehrhardt *Germany*
L A Oro *Spain*
P Papon *France*
H L Wesseling *The Netherlands*
A E S Mayer *ESF*

ESF associated board and committee membership

European Boards for Marine and Polar Science (EMaPS-Boards)

R B Heywood (Chairman Joint Boards Executive)

British Antarctic Survey

EMaPS-Marine Board Members and their Delegates

Centre National de la Recherche Scientifique

D Cadet (Chairman) *France*

Norges Forskningsråd

U Lie *Norway*

Statens Naturvidenskabelige Forskningsråd

K Richardson (Vice-Chairman) *Denmark*

Instituto Español de Oceanografia

R Robles (Vice-Chairman) *Spain*
(to Sept 96)

Fonds National de la Recherche Scientifique

M Frankignoulle *Belgium*

Fonds voor Wetenschappelijk Onderzoek-Vlaanderen

M Vincx *Belgium*

Suomen Akatemia / Finlands Akademi

M Leppäranta *Finland*

Institut Français de Recherche pour l'Exploitation de la Mer

P David *France*

Deutsche Forschungsgemeinschaft

G Wefer *Germany*

National Centre for Marine Research

D Papanikolaou *Greece*

Marine Research Institute

O S Astthorsson *Iceland*

Marine Institute

P Heffernan *Ireland*

Ente per le Nuove Tecnologie, l'Energia e l'Ambiente

V Artale *Italy*

Consiglio Nazionale delle Ricerche

S Vallerga *Italy*

Nederlandse organisatie voor wetenschappelijk onderzoek / Koninklijke Nederlandse Akademie van Wetenschappen

J W de Leeuw *The Netherlands*

Institute of Marine Science

R Vaage *Norway*

Polska Akademia Nauk

J Dera *Poland*

Junta Nacional de Investigaçao Cientifica e Tecnológica

L Saldanha *Portugal*

Consejo Superior de Investigaciones Cientificas / Secretaría General del Plan Nacional de Investigación Científica y Desarollo Tecnológico

J Tintore *Spain*

Naturvetenskapliga forskningsrådet

L Rahm *Sweden*

Schweizerischer Nationalfonds zur Förderung der wissenschaftlichen Forschung

T Stocker *Switzerland*

TÜBITAK-The Scientific and Technical Research Council of Turkey

N Kemal Pak, *Turkey*

Centre for Coastal and Marine Sciences

F Mantoura *United Kingdom*

Southampton Oceanography Centre

J Shepherd *United Kingdom*

ESF Scientific Secretary:
L d'Ozouville
ESF Contact:
J Swift
Tel: +33 (0)3 88 76 71 41
Email: emaps@esf.org

EMaPS-Polar Board Members and their Delegates

British Antarctic Survey

R B Heywood (Chairman) *United Kingdom*

The Commission for Scientific Research in Greenland

J P Hart Hansen (Vice-Chairman) *Denmark*

Ente per le Nuove Tecnologie, l'Energia e l'Ambiente

M Zucchelli (Vice-Chairman) *Italy*

Fonds voor Wetenschappelijk Onderzoek-Vlaanderen

H Decleir *Belgium*

Fonds National de la Recherche Scientifique

R Souchez *Belgium*

Statens Naturvidenskabelige Forskningsråd / Det Kongelige Danske Videnskabernes Selskab

C Hammer *Denmark*

Suomen Akatemia / Finlands Akademi

P Mälkki *Finland*

Institut Français pour la Recherche et la Technologie Polaires

R Gendrin *France*

Alfred Wegener Institute

M Tilzer *Germany*

Rannsóknarráõ Islands

H Björnsson *Iceland*

Consiglio Nazionale delle Ricerche

R Azzolini *Italy*

Nederlandse organisatie voor wetenschappelijk onderzoek / Koninklijke Nederlandse Akademie van Wetenschappen

R Schorno *The Netherlands*

Norsk Polarinstitutt

O Orheim *Norway*

Norges Forskningsråd

A Schytte Blix *Norway*

Polska Akademia Nauk

S Rakusa-Suszczewski *Poland*

Russian Academy of Sciences
V Paulenko *Russian Federation*
Consejo Superior de Investigaciones Cientificas
J R Vericad *Spain*
Kungliga Vetenskapsakademien
D Hedberg *Sweden*
Polarforskningssekretariatet
O Melander *Sweden*
Schweizerischer Nationalfonds zur Förderung der wissenschaftlichen Forschung
B Stauffer *Switzerland*
Natural Environment Research Council
D J Drewry *United Kingdom*

ESF Scientific Secretary: **C A Williams**
ESF Contact: **J Swift**
Tel: +33 (0)3 88 76 71 41
Email: emaps@esf.org

Committee on Radio Astronomy Frequencies (CRAF)

R J Cohen (Chairman) *United Kingdom*
T A Th Spoelstra (Secretary) *The Netherlands*
R Bachiller *Spain*
A O Benz *Switzerland*
G F Block *France*
P Cugnon *Belgium*
B Darchy *France*
B A Doubinski *Russia*
D Morris *France*
M E Özel *Turkey*
J E B Ponsonby *United Kingdom*
W Reich *Germany*
K Ruf *Germany*
A A Sanches de Magalhaes *Portugal*
A Tlamicha *Czech Republic*
G Tomassetti *Italy*
J B Usowicz *Poland*
G Wannberg *Sweden*
A Winnberg *Sweden*

ESF Scientific Secretary: **H U Karow**
ESF Contact: **M Clifford**
Tel: +33 (0)3 88 76 71 07
Email: pesc@esf.org

CRAF Review Panel

K A Pounds (Chairman) *United Kingdom*
D Kavlie *ESF Executive Council*
C Mancini *Italy*
P Mandel *Belgium*
F W Sluijter *The Netherlands*
H U Karow *ESF*

European Space Science Committee (ESSC)

F Becker (Chairman) *France*
W Alpers *Germany*
M Candidi *Italy*
A M Cruise *United Kingdom*
K Dose *Germany*
J J Favier *France*
A Giménez *Spain*
R J Gurney *United Kingdom*
G Haerendel *Germany*
N Kiehne *Germany*
J-C Legros *Belgium*
D Linnarsson *Sweden*
N Mandolesi *Italy*
P Masson *France*
G Mégie *France*
A Mugnai *Italy*
R Rummel *Germany*
H W Schnopper *Denmark*
F W Taylor *United Kingdom*
G Védrenne *France*
A A Zdziarski *Poland*

ESF Scientific Secretary: **M Fratta**
ESF Contact: **C Werner**
Tel: +33 (0)3 88 76 71 28
Email: cwerner@esf.org
Scientific Assistant to the Chairman:
J-C Worms

The ESSC meetings are also attended by representatives from the European Space Agency, the European Commission, the Space Research Institute of the Russian Academy of Sciences, the Space Studies Board of the US National Academy of Sciences, and COSPAR.

ESSC Review Panel

A Lebeau (Chairman) *France*
M Hallikainen *Finland*
W Kröll *ESF Executive Council*
J Langer *Poland*
K A Pounds *United Kingdom*
M Fratta *ESF*

Nuclear Physics European Collaboration Committee (NuPECC)

S Galès (Chairman) *France*
G E Körner (Secretary) *Germany*
J Äystö *Finland*
T Dossing *Denmark*
H Doubre *France*
A Fonseca *Portugal*
P Guichon *France*
J Jastrzebski *Poland*
H Leeb *Austria*
R Malfliet *The Netherlands*
G van Middelkoop *The Netherlands*
E Migneco *Italy*
G C Morrison *United Kingdom*
E Moya de Guerra *Spain*
E Osnes *Norway*
G Ricco *Italy*
B Schoch *Germany*
D Schwalm *Germany*
A Shotter *United Kingdom*
I Sick *Switzerland*
Ö Skeppstedt *Sweden*
J Vervier *Belgium*
A Wagner *Germany*

Observers
R Boch *EPS*
E Fernandez *ECFA*

ESF Scientific Secretary: **H U Karow**
ESF Contact: **M Clifford**
Tel: +33 (0)3 88 76 71 07
Email: pesc@esf.org

NuPECC Review Panel

G Öquist (Chairman) *ESF Executive Council*
J-P Desclaux *France*
N Kroó *Hungary*
Sir W Mitchell *United Kingdom*
H Rauch *Austria*
H U Karow *ESF*

ESF member organisations

In November, the ESF General Assembly approved the applications for membership of the Italian National Institute for the Physics of Matter (INFM), the Italian National Institute for Nuclear Physics (INFN) and the Swedish Research Council for Engineering Sciences (TFR). This brings the number of ESF Member Organisations to 62 in 21 countries.

Austria

Fonds zur Förderung der wissenschaftlichen Forschung in Österreich
Austrian Science Research Fund
Weyringergasse 35 • A-1040 Wien

Österreichische Akademie der Wissenschaften
Austrian Academy of Sciences
Dr. Ignaz-Seipel Platz 2 • A-1010 Wien

Belgium

Fonds National de la Recherche Scientifique / Fonds voor Wetenschappelijk Onderzoek-Vlaanderen
National Fund for Scientific Research / Fund for Scientific Research-Vlaanderen
5 Egmontstraat • B-1000 Brussel
5 rue d'Egmont • B-1000 Bruxelles

Denmark

Det Kongelige Danske Videnskabernes Selskab
Royal Danish Academy of Sciences and Letters
H.C. Andersens Boulevard 35
DK-1553 København V

Statens Humanistiske Forskningsråd
Humanities Research Council

Statens Jordbrugs-og Veterinaer-videnskabelige Forskningsråd
Agricultural and Veterinary Science Research Council

Statens Sundhedsvidenskabelige Forskningsråd
Medical Research Council

Statens Naturvidenskabelige Forskningsråd
Natural Science Research Council

Statens Samfundsvidenskabelige Forskningsråd
Social Sciences Research Council

Statens Teknisk-Videnskabelige Forskningsråd
Technical Research Council

The administrations of the six research councils are assumed by:
Forskningsrådene
Bredgade 43 • DK-1260 København K

Finland

Suomen Akatemia/Finlands Akademi
Academy of Finland
PO Box 99 • Vilhonvuorenkatu 6
SF-00501 Helsinki

Suomen Tiedeakatemiain Valtuuskunta/ Delegationen för Vetenskapsakademierna i Finland
Delegation of the Finnish Academies of Science and Letters
Mariankatu 5 • SF-00170 Helsinki

France

Centre National de la Recherche Scientifique
National Centre for Scientific Research
3 rue Michel-Ange • F-75794 Paris Cedex 16

Commissariat à l'Energie Atomique Direction des Sciences de la Matière
Institute for Basic Research of the Atomic Energy Commission
Centre d'Etudes Nucléaires de Saclay
Orme des Merisiers
F-91191 Gif-sur-Yvette Cedex

Institut Français de Recherche pour l'Exploitation de la Mer
French Sea Research Institute
Technopolis 40
155, rue Jean-Jacques Rousseau
F-92138 Issy-les-Moulineaux Cedex

Institut National de la Santé et de la Recherche Médicale
National Institute for Health and Medical Research
101, rue de Tolbiac • F-75654 Paris Cedex 13

Germany

Deutsche Forschungsgemeinschaft
German Research Society
Kennedyallee 40 • D-53175 Bonn

Hermann von Helmholtz-Gemeinschaft Deutscher Forschungszentren
Association of National Research Centres
Postfach 20 14 48 / Ahrstrasse 45
D-53175 Bonn

Konferenz der deutschen Akademien der Wissenschaften
Conference of Academies of Arts and Sciences
Geschwister-Scholl-Strasse 2 • D-55131 Mainz

Max-Planck-Gesellschaft
Max Planck Society
Hofgartenstrasse 2 • Postfach 101062
D-80539 München

Greece

National Hellenic Research Foundation
48 Vassileos Constantinou Avenue
GR-116 35 Athens

Hungary

Magyar Tudományos Akadémia
Hungarian Academy of Sciences
Roosevelt tér. 9 • H-1051 Budapest

Országos Tudományos Kutatási Alap
Hungarian Scientific Research Fund
Konyves Kalman Krt. 48-52 • H-1087 Budapest

Iceland

Rannsóknarráð Islands
The Research Council of Iceland
Laugavegi 13 • IS-101 Reykjavik

Ireland

FORBAIRT
Glasnevin • IRL-Dublin 9

Health Research Board
73 Lower Baggot Street • IRL-Dublin 2

Royal Irish Academy
19 Dawson Street • IRL-Dublin 2

Italy

Consiglio Nazionale delle Ricerche
National Research Council
Piazzale Aldo Moro 7 • I-00100 Roma

Ente per le Nuove Tecnologie, l'Energia e l'Ambiente
Italian Agency for new Technologies, Energy and the Environment
Lungotevere Thaon de Revel 76 • I-00196 Roma

Istituto Nazionale per la Fisica della Materia
National Institute for the Physics of Matter
Corso Perrone 24 • I-16152 Genova

Istituto Nazionale di Fisica Nucleare
National Institute for Nuclear Physics
Piazza del Caprettari 70 • I-00186 Roma

The Netherlands

Koninklijke Nederlandse Akademie van Wetenschappen
Royal Netherlands Academy of Arts and Sciences
Het Trippenhuis • Kloveniersburgwal 27
Postbus 19121 • NL-1000 GC Amsterdam

Nederlandse Organisatie voor Wetenschappelijk Onderzoek
Netherlands Organisation for Scientific Research
Laan van Nieuw Oost Indië 131
Postbus 93138 • NL-2509 AC Den Haag

Norway

Det Norske Videnskaps-akademi
Norwegian Academy of Science and Letters
Drammensveien 78 • N-Oslo 2

Norges Forskningsråd
The Research Council of Norway
Stensberggata 26 • P.O. Box 2700
St Hanshaugen • N-0131 Oslo

Poland

Polska Akademia Nauk
Polish Academy of Sciences
Palac Kultury i Nauki • PL-00-901 Warsaw

Portugal

Academia das Ciências de Lisboa
Lisbon Academy of Sciences
Rua da Academia das Ciências, 19
P-1200 Lisboa

Junta Nacional de Investigaçao Cientifica e Tecnológica
Council for Scientific and Technological Research
Avenida Dom Carlos I, 126 • P-1200 Lisboa

Slovenia

Slovenska Akademija Znanosti in Umetnosti
Slovenian Academy of Sciences and Arts
Novi trg. 3 • SLO-61000 Ljubljana

Slovenska Znanstvena Fundacija
Slovenian Science Foundation
Stefanova 15 • SLO-61000 Ljubljana

Spain

Consejo Superior de Investigaciones Cientificas
Council for Scientific Research
Serrano 117 • E-28006 Madrid

Secretaría General del Plan Nacional de Investigación Científica y Desarollo Tecnológico
General Secretariat of the National Plan for Scientific Research and Technological Development
Rosario Pino, 14-16 • E-28020 Madrid

Sweden

Forskningsrådsnämnden
Council for Planning and Coordination of Research
Regeringsgatan 56
Box 7101 • S-103 87 Stockholm

Humanistisk-Samhällsvetenskapliga Forskningsrådet
Humanities and Social Sciences Research Council
Regeringsgatan 56
Box 7120 • S-103 87 Stockholm

Kungliga Vetenskapsakademien
The Royal Academy of Sciences
Box 50005 • S-104 05 Stockholm

Kungliga Vitterhets-, Historie- och Antikvitetsakademien
Royal Academy of Letters, History and Antiquities
Box 5622 • Villagatan 3 • S-114 86 Stockholm

Medicinska Forskningsrådet
Medical Research Council
Box 7151 • Regeringsgatan 56
S-103 88 Stockholm

Naturvetenskapliga Forskningsrådet
Natural Science Research Council
Box 7142 • Regeringsgatan 56
S-103 87 Stockholm

Skogs- och Jordbrukets Forskningsråd
Swedish Council for Forestry and Agricultural Research
Odengatan 61 • Box 6488
S-113 82 Stockholm

Socialvetenskapliga Forskningsrådet
Swedish Council for Social Research
Tullgränd 4 • Box 2220 • S-103 15 Stockholm

Teknikvetenskapliga Forskningsrådet
Swedish Research Council for Engineering Sciences
Box 7136 • Regeringsgatan 56
S-103 15 Stockholm

Switzerland

Schweizerischer Nationalfonds zur Förderung der wissenschaftlichen Forschung
Swiss National Science Foundation
Wildhainweg 20
Postfach 2338 • CH-3001 Bern

Konferenz der schweizerischen wissenschaftlichen Akademien
Conference of the Swiss Scientific Academies
Hirschengraben 11
Postfach 2535 • CH-3001 Bern

Turkey

The Scientific and Technical Research Council of Turkey
Atatürk Bulvari 221 • Kavaklidere
TR-06100 Ankara

United Kingdom

Biotechnology and Biological Sciences Research Council
Central Office
Polaris House • North Star Avenue
GB-Swindon SN2 1UH

The British Academy
20-21 Cornwall Terrace
GB-London NW1 4QP

Economic and Social Research Council
Polaris House
North Star Avenue • GB-Swindon SN2 1UJ

Engineering and Physical Sciences Research Council
Polaris House
North Star Avenue • GB-Swindon SN2 1ET

Medical Research Council
20 Park Crescent • GB-London W1N 4AL

Natural Environment Research Council
Polaris House
North Star Avenue • GB-Swindon SN2 1EU

Particle Physics and Astronomy Research Council
Polaris House
North Star Avenue • GB-Swindon SN2 1SZ

The Royal Society
6 Carlton House Terrace
GB-London SW1Y 5AG

Finance and accounts

In order to provide the latest available information on ESF Finances, the 1996 Accounts, which are being audited during 1997 are, with the Auditor's approval, published in this Report. When approved by the Auditor, the 1996 accounts will be presented to and discussed by the Finance Committee (see page 72) at its April meeting, the Executive Council at its May meeting and the Assembly in November 1997. Any modification requested by the Auditor or by the above mentioned bodies will be clearly identified in next year's Report.

The running of the ESF and its activities is funded by contributions from ESF Member Organisations.

The GENERAL BUDGET is used to finance the running of the ESF Secretariat (staff, administrative costs, statutory meetings, equipment) and the general scientific activity (meetings of the Standing Committees and of the working groups, cost of various workshops - especially those needed in the preparation of ESF Scientific Programmes; publications).

Table 1 presents the Inflow and Use of Funds in 1996. The Balance Sheet on 31 December 1996 and 1995 is given in Table 2.

In November 1996, the Assembly approved the 1997 General Budget, amounting to 30 324 kFF. It is itemised in Table 3.

The NETWORK ACCOUNT is used for the co-ordination of Network operations and for the running of Phase 1 Networks.

Table 4 presents the Inflow and Use of Funds in 1996. The Balance Sheet on 31 December 1996 and 1995 is presented in Table 5.

For 1997, the Assembly approved a budget of 5 250 kFF, including a target unspent balance of 100 kFF, thus providing 5 150 kFF for the running of Network Operations, as itemised in Table 6.

The sum of the GENERAL BUDGET and the NETWORK ACCOUNT constitutes the budget for the ESF BASIC ACTIVITIES which is shared between all ESF Member Organisations according to a scale of contributions set out according to the statute (Table 7).

In addition to the activities funded from the Basic Activities' Budget, other activities are funded *à la carte* only by those Member Organisations which are interested in participating. These activities are named Scientific Programmes (Additional Activities and Associated Programmes). The ESF also runs some 'special budgets' (funds received from various non-ESF Organisations, 'workshop funds' established by Member Organisations and run by the ESF, etc). Amongst these special budgets are the accounts for the Programme of European Research Conferences (EURESCO) and for the European Marine and Polar Science Boards.

In order to provide an overview of all the funds managed by the ESF, Consolidated Accounts are presented in Table 8, and the Consolidated Balance Sheet on 31 December 1996 in Table 9.

Table 1: **1996 General Budget (in FF)**

Use of Funds	
1. Actual expenditure*	29 214 826.63
Salaries and Charges	17 886 506.26
Running expenses	2 548 211.01
Scientific and statutory meetings	6 584 368.35
Publications and publicity	1 381 399.57
Equipment and maintenance work	711 130.21
Miscellaneous	103 211.23
2. Additional expenditure on works	1 189 182.78
3. Carry forward to 1997 (committed to reduce the 1997 Call)	3 500 000.00
4. Transfer to the Reserve Fund	55 931.33
5. Transfer to the Reserve Fund for EURESCO	900 000.00
6. Provision for doubtful debts	237 247.64
Total Use of Funds	35 097 188.38
Excess of Inflow of Funds over Use of Funds	450 111.10
	35 547 299.48

Inflow of Funds		
1. Brought forward from 1995		4 943 849.85
1.1• 1995 excess of Inflow of Funds over Use of Funds	1 543 849.85	
1.2• 1995 interest committed to reduce the 1996 call	3 400 000.00	
2. 1996 Contributions from Member Organisations		23 966 000.00
2.1• for the General Budget	23 066 000.00	
2.2• for the provision for EURESCO	900 000.00	
3. Transfers for management costs		3 300 000.00
4. Additional management costs		123 425.00
5. 1996 Bank Interest		2 012 081.48
6. Use of the provision for works		1 189 182.78
7. Miscellaneous income		12 760.37
Total Inflow of Funds		**35 547 299.48**

* Including expenditure (other than staff) incurred for EURESCO

Table 2: **General Budget: Balance sheet on 31 December 1996 and 1995 (in FF)**

Assets	1996	1995
Fixed Assets (furniture and office equipment)	1 157 435.91	1 279 550.10
Current Assets		
• Contributions expected from Member Organisations	1 303 286.58	625 389.95
• Accounts receivable	111 350.00	—
• Paid in advance	50 586.60	135 847.76
• Securities	31 168 360.20	26 387 194.85
• Cash in hand	235.12	673.48
	33 791 254.41	**28 428 656.14**

Liabilities	1996	1995
Capital Endowment	1 157 435.91	1 279 550.10
Reserve Fund	3 804 441.46	3 748 510.13
Reserve Fund / EURESCO	900 000.00	600 000.00
Provision for Works	—	1 189 182.78
Provision for doubtful debts	462 511.64	225 264.00
Current Liabilities		
• Accounts payable	2 876 623.43	2 940 736.73
• Clearing account	24 877.72	3 121 709.64
• Commitment for SCSS Grants	199 885.00	100 000.00
• Collected or received in advance	3 500 000.00	3 400 000.00
• Cash owed to the bank*	20 092 672.07	9 796 412.08
• Interest received after respectively 14/10/96 and 18/10/95	322 696.08	483 440.83
Excess of Inflow of Funds over Use of Funds	450 111.10	1 543 849.85
	33 791 254.41	**28 428 656.14**

* The cash owed to the bank implies no interest payments to the bank, because the bank takes into account the positive overall balance for all ESF accounts.

Table 3: **General Budget for 1996 and 1997 (in kFF)**

	1996	1997
Salaries and charges	18 077	18 965
Running expenses	3 030	2 929
Scientific and statutory meetings	6 370	6 220
Publications and publicity	1 450	1 400
Equipment and maintenance work	650	650
Others (incl. Audit costs)	189	160
	29 766	**30 324**

Table 4: **Network Account: Inflow and Use of Funds 1996 (in FF)**

Use of Funds		
Expenditure for 26 Phase 1 Networks		3 695 278.02
Exploratory workshops		133 007.30
Management and administration		869 747.73
• 1996 ESF Management charges	750 000.00	
• Publications, bank charges and miscellaneous	81 647.73	
• Network Committee meetings	38 100.00	
Provision for doubtful debts		46 586.56
Total Use of Funds		4 744 619.61
Excess of Inflow over Use of Funds		871 000.60
		5 615 620.21

Inflow of Funds	
1996 Contributions from Member Organisations	4 970 000.00
Carried over from previous year	596 186.36
1996 bank interest	49 433.85
Total Inflow of Funds	**5 615 620.21**

Table 5: **Network Account: Balance Sheet on 31 December 1996 and 1995 (in FF)**

Assets	1996	1995
Current Assets		
• Contributions expected from Member Organisations	265 103.96	117 018.43
• Contributions received on General Budget	—	35 206.57
• Accounts receivable	—	73 300.20
• Paid in advance	136 938.86	71 864.97
• Securities	994 665.91	566 450.96
• Cash in bank	8 243.21	40 015.45
	1 404 951.94	**903 856.58**

Liabilities	1996	1995
Current Liabilities		
• Accounts payable	443 204.78	263 510.22
• Provision for doubtful debts	90 746.56	44 160.00
Excess of Inflow over Use of Funds	871 000.60	596 186.36
	1 404 951.94	**903 856.58**

Table 6: **Budgeted Use of Funds of Network Account in 1996 and 1997 (in kFF)**

	1996	1997
Phase 1 Networks	4 250	3 920
Exploratory workshops, travels and meetings	480	480
Management costs	750	750
Target unspent balance	100	100
	5 580	**5 250**

Table 7: **Scale of Contributions**

(Based on net national income at market prices)

	1992	1993/94	1995	1996/97
	%	%	%	%
Austria	2.24	2.27	2.29	2.33
Belgium	2.83	2.87	2.69	2.75
Denmark	1.95	1.98	1.81	1.78
Finland	1.51	1.53	1.51	1.25
France	16.94	17.17	16.63	16.37
Germany	21.37	21.66	22.91	23.54
Greece	0.95	0.96	0.98	0.99
Hungary	0.50	0.51	0.46	0.46
Iceland	0.10	0.10	0.08	0.08
Ireland	0.51	0.52	0.55	0.56
Italy	14.74	14.94	15.03	14.70
The Netherlands	4.22	4.28	4.10	4.10
Norway	1.56	1.58	1.39	1.34
Poland	1.48	1.50	1.14	1.17
Portugal	0.61	0.62	0.65	0.67
Slovenia	—	—	—	0.21
Spain	5.74	5.82	6.16	6.34
Sweden	3.11	3.15	3.16	2.84
Switzerland	3.54	3.59	3.43	3.35
Turkey	1.14	1.16	1.22	1.25
United Kingdom	13.60	13.79	13.81	13.92
Yugoslavia	1.36	—	—	—
	100.00	**100.00**	**100.00**	**100.00**

- Figures for 1992 and 1993/1994 are based on net national incomes for the years 1986, 1987 and 1988.
- Figures for 1995 are based on net national incomes for the years 1990, 1991 and 1992.
- Before 1995 income figures used for Germany were for the Federal Republic. Since 1995 they are for the reunified Germany.
- Figures for 1996 and 1997 are based on net national incomes for the years 1991, 1992 and 1993.

Table 8: **1996 Consolidated Inflow and Use of Funds (In FF)**

	Use of Funds				
	Basic Activities	Scientific Programmes, & Assoc. Committees	Special Budgets	Excess of Inflow over use of Funds	Total
General Budget	35 097 188.38			450 111.10	35 547 299.4
Network Account	4 744 619.61			871 000.60	5 615 620.2
AA Airborne Polar Experiment		684 827.99		139 043.26	823 871.2
AA Artificial Biosensing Interfaces		779 515.81		119 802.45	899 318.2
AA Asian Studies Workshops		813 591.71		313 272.72	1 126 864.4
AA Beliefs in Government		625 726.23		—	625 726.2
AA Biophysics of Photosynthesis		1 294 050.99		247 964.25	1 542 015.2
AA Chemistry of Metals in Biological Systems		438 192.89		244 681.01	682 873.9
AA Concepts and Symbols in 18th Century Europe		920 589.76		734 936.75	1 655 526.5
AA Control of Complex Systems		675 960.75		548 771.78	1 224 732.5
AA Database of the Quaternary Mammals of Europe		290 267.14		76 877.32	367 144.4
AA Dynamics of Gas-Surface Interactions		96 605.17		—	96 605.1
AA Environment and Health		257 782.93		237 217.07	495 000.0
AA European Ice Sheet Modelling Initiative		377 205.85		852 654.77	1 229 860.6
AA European Lake Drilling Programme		271 443.65		78 556.35	350 000.0
AA European Management & Organisations in Transition		886 285.80		531 704.84	1 417 990.6
AA European Palaeoclimate		553 623.76		—	553 623.7
AA European Project for Ice-Coring in Antarctica		241 365.80		68 634.20	310 000.0
AA European Volcanological Project		156 803.63		321 873.15	478 676.7
AA Europrobe		1 696 260.25		- 80 889.70	1 615 370.5
AA The Evolution of Chemistry in Europe		740 950.72		477 793.55	1 218 744.2
AA Geographic Information Systems		1 053 459.15		1 796 802.52	2 850 261.6
AA Individual and Society in the Mediterranean Muslim World		730 073.07		362 676.93	1 092 750.0
AA Language Typology		324 979.46		678 210.85	1 003 190.3
AA Learning in Humans and Machines		1 178 617.03		525 860.30	1 704 477.3
AA Kinetic Processes in Minerals and Ceramics		240 208.74		276 988.43	517 197.1
AA Mathematical Treatment of Free Boundary Problems		1 197 670.78		183 695.22	1 381 366.0
AA Origins of the Modern State		21 299.48		—	21 299.4
AA Population Biology		1 005 754.37		28 611.26	1 034 365.6
AA Process Integration in Biochemical Engineering		379 285.42		421 573.77	800 859.1
AA Quaternary Environment of the Eurasian North		451 511.32		48 488.68	500 000.0
AA Regional and Urban Restructuring in Europe		353 721.35		—	353 721.3
AA Relativistic Effects in Heavy Elements Chem. & Phys.		760 304.83		131 176.00	891 480.8
AA Study of the European Arctic Shelf		302 692.61		—	302 692.6
AA Tackling Environmental Resource Management		681 312.74		2 086 847.58	2 768 160.3
AA Transformation of the Roman World		1 587 549.29		495 889.06	2 083 438.3
AA Transport Processes in the Atmosphere and Oceans		365 442.18		204 557.82	570 000.0
AA Tropical Canopy Research		357 261.73		560 147.02	917 408.7
AA Vapour-phase Nano-particle Materials		358 743.14		1 021 294.15	1 380 037.2
AP Developmental Biology		1 182 543.84		681 502.25	1 864 046.0
AP European Neuroscience Programme		3 473 406.54		215 524.90	3 688 931.4
AP European Consortium for Ocean Drilling		775 303.71		181 117.20	956 420.9
AP European Glaciological Programme / Greenland Icecore project		1 150 004.75		—	1 150 004.7
AP Programme of Fellowships in Toxicology		2 358 848.42		282 625.12	2 641 473.5
AP Polar North Atlantic Margins		79 588.46		—	79 588.4
AP Molecular Neurobiology of Mental Illness		2 067 439.40		—	2 067 439.4
AC NuPECC		522 946.91		461 550.25	984 497.1
AC Space Science Committee		828 951.46		191 769.29	1 020 720.7
General Account for Scientific Programmes		2 467 035.29		194 112.35	2 661 147.6
SB Asian Studies Fellowships			3 854 339.93	242 662.61	4 097 002.5
SB EURESCO			11 580 020.21	57 714.96	11 637 735.1
SB European Marine and Polar Science			1 781 198.54	387 208.21	2 168 406.7
SB British Academy Special Fund			—	23 816.84	23 816.8
SB CNR Special Fund			5 781.63	91 420.23	97 201.8
SB ESRC Special Fund			—	102 860.54	102 860.5
SB NWO/Russians			24 000.00	8 939.17	32 939.1
SB GOA			1 444.42	- 1 444.42	
Earlier Contributions written-off					
Total	**39 841 807.99**	**38 057 006.30**	**17 246 784.73**	**18 178 204.56**	**113 323 803.5**

AA = Additional Activity AC = Associated Committee SB = Special Budget AP = Associated Programme

Inflow of Funds

	Basic Activities	Scientific Programmes, & Assoc. Committees	Special Budgets	Carried over from 1995	Total*
General Budget	29 414 266.85			6 133 032.63	35 547 299.48
Network Account	5 019 433.85			596 186.36	5 615 620.21
AA Airborne Polar Experiment		715 000.00		108 871.25	823 871.25
AA Artificial Biosensing Interfaces		735 000.00		164 318.26	899 318.26
AA Asian Studies Workshops		920 000.00		206 864.43	1 126 864.43
AA Beliefs in Government		—		625 726.23	625 726.23
AA Biophysics of Photosynthesis		984 000.00		558 015.24	1 542 015.24
AA Chemistry of Metals in Biological Systems		605 000.00		77 873.90	682 873.90
AA Concepts and Symbols in 18th Century Europe		620 000.00		1 035 526.51	1 655 526.51
AA Control of Complex Systems		822 773.30		401 959.23	1 224 732.53
AA Database of the Quaternary Mammals of Europe		300 000.00		67 144.46	367 144.46
AA Dynamics of Gas-Surface Interactions		—		96 605.17	96 605.17
AA Environment and Health		495 000.00		—	495 000.00
AA European Ice Sheet Modelling Initiative		695 000.00		534 860.62	1 229 860.62
AA European Lake Drilling Programme		350 000.00		—	350 000.00
AA European Management & Organisations in Transition		943 015.00		474 975.64	1 417 990.64
AA European Palaeoclimate		—		553 623.76	553 623.76
AA European Project for Ice-Coring in Antarctica		310 000.00		—	310 000.00
AA European Volcanological Project		—		478 676.78	478 676.78
AA Europrobe		1 310 000.00		305 370.55	1 615 370.55
AA The Evolution of Chemistry in Europe		472 500.00		746 244.27	1 218 744.27
AA Geographic Information Systems		1 558 375.00		1 291 886.67	2 850 261.67
AA Individual and Society in the Mediterranean Muslim World		1 092 750.00		—	1 092 750.00
AA Language Typology		—		1 003 190.31	1 003 190.31
AA Learning in Humans and Machines		885 642.50		818 834.83	1 704 477.33
AA Kinetic Processes in Minerals and Ceramics		340 500.00		260 697.17	601 197.17
AA Mathematical Treatment of Free Boundary Problems		1 069 000.00		312 366.00	1 381 366.00
AA Origins of the Modern State		—		21 299.48	21 299.98
AA Population Biology		821 628.52		212 737.11	1 034 365.63
AA Process Integration in Biochemical Engineering		480 000.00		320 859.19	800 859.19
AA Quaternary Environment of the Eurasian North		500 000.00		—	500 000.00
AA Regional and Urban Restructuring in Europe		—		353 721.35	353 721.35
AA Relativistic Effects in Heavy Elements Chem. & Phys.		700 000.00		291 480.83	991 480.83
AA Study of the European Arctic Shelf		—		302 692.61	302 692.61
AA Tackling Environmental Resource Management		500 000.00		2 268 160.32	2 768 160.32
AA Transformation of the Roman World		1 092 000.00		991 438.35	2 083 438.35
AA Transport Processes in the Atmosphere and Oceans		570 000.00		—	570 000.00
AA Tropical Canopy Research		530 000.00		387 408.75	917 408.75
AA Vapour-phase Nano-particle Materials		854 956.26		525 081.03	1 380 037.29
AP Developmental Biology		1 406 000.00		458 046.09	1 864 046.09
AP European Neuroscience Programme		3 120 664.43		568 267.01	3 688 931.44
AP European Consortium for Ocean Drilling		804 190.97		152 229.94	956 420.91
AP European Glaciological Programme / Greenland Icecore project		906 334.00		243 670.75	1 150 004.75
AP Programme of Fellowships in Toxicology		2 388 000.00		253 473.54	2 641 473.54
AP Polar North Atlantic Margins		—		79 588.46	79 588.46
AP Molecular Neurobiology of Mental Illness		1 906 000.00		161 439.40	2 067 439.40
AC NuPECC		679 039.84		305 457.32	984 497.16
AC Space Science Committee		530 000.00		490 720.75	1 020 720.75
General Account for Scientific Programmes		1 245 100.66		1 416 046.98	2 661 147.64
SB Asian Studies Fellowships			1 055 719.17	3 041 283.37	4 097 002.54
SB EURESCO			11 254 863.20	382 871.97	11 637 735.17
SB European Marine and Polar Science			1 935 146.90	233 259.85	2 168 406.75
SB British Academy Special Fund				23 816.84	23 816.84
SB CNR Special Fund			37 567.00	59 634.86	97 201.86
SB ESRC Special Fund				102 860.54	102 860.54
SB NWO/Russians				32 939.17	32 939.17
SB GOA					
Earlier Contributions written-off				- 184 000.00	- 184 000.00
Total	34 433 700.70	34 257 470.48	14 283 296.27	30 349 336.13	113 323 803.58

hen, on a same line, figures in the last column (Total inflow of funds) are higher than figures in the first column (Total use of funds)

denotes that earlier contributions have been written off (see last line)

Table 9: **Consolidated Balance Sheet on 31.12.1996 [in bold] and 31.12. 1995 (in FF)**

Assets	Basic Activities	Scientific Programmes. & Assoc. Committees	Special Budgets	Total
Furniture and office equipment	**1 157 435.91** 1 279 550.10			**1 157 435.91** 1 279 550.10
Contributions expected from Member Organisations	**1 568 390.54** 742 408.38	**3 402 673.67** 1 436 413.67	**70 000.00** 100 000.00	**5 041 064.21** 2 278 822.05
Contributions received on General Budget	35 206.57	2 968 520.00	100 000.00	3 103 726.57
Payments expected from the European Union			**4 841 802.67** 6 275 082.92	**4 841 802.67** 6 275 082.92
Accounts receivable	**111 350.00** 73 300.20	**234 555.71** 47 264.42	**—** 74 688.75	**345 905.71** 195 253.37
Paid in advance	**187 525.46** 207 712.73	**335 240.92** 357 210.48	**118 276.45** 52 130.14	**641 042.83** 617 053.35
Clearing Account	**—** —	**9 178.00** 2 000.00	**8 676.28** 8 117.39	**17 854.28** 10 117.39
Securities	**32 163 026.11** 26 953 645.81	**906 948.49** 1 342 787.27	**3 307 552.22** 3 063 448.96	**36 377 526.82** 31 359 882.04
Cash in Bank	**8 243.21** 40 015.45	**17 935 038.75** 17 641 183.68	**980 641.91** 226 421.77	**18 923 923.87** 17 907 620.90
Excess of Use of Funds over Inflow of Funds		**80 889.70**	**1 444.42**	**82 334.12**
Cash in hand	**235.12** 673.48			**235.12** 673.48
Total	**35 196 206.35** 29 332 512.72	**22 904 525.24** 23 795 379.52	**9 328 393.95** 9 899 889.93	**67 429 125.54** 63 027 782.17

Liabilities	Basic Activities	Scientific Programmes. & Assoc. Committees	Special Budgets	Total
Capital Endowment	**1 157 435.91** 1 279 550.10			**1 157 435.91** 1 279 550.10
Reserve Fund	**3 804 441.46** 3 748 510.13			**3 804 441.46** 3 748 510.13
Reserve Fund EURESCO	**900 000.00** 600 000.00			**900 000.00** 600 000.00
Provision for Works	**—** 1 189 182.78			**—** 1 189 182.78
Provision for doubtful debt	**553 258.20** 269 424.00			**553 258.20** 269 424.00
Accounts payable	**3 319 828.21** 3 204 246.95	**1 852 687.13** 3 633 928.98	**558 227.25** 208 157.84	**5 730 742.59** 7 046 333.77
Clearing Account	**24 877.72** 3 121 709.64	**109 648.99** 64 000.00		**134 526.71** 3 185 709.64
Collected or received in advance	**3 822 696.08** 3 883 440.83	**66 700.00** 265 023.03	**4 663 068.29** 1 297 491.50	**8 552 464.37** 5 445 955.36
Provision for commitments	**199 885.00** 100 000.00	**4 811 148.61** 3 337 728.99	**3 051 371.09**	**8 062 404.70** 3 437 728.99
Cash owed to the bank	**20 092 672.07** 9 796 412.08	**39 536.09** —	**141 104.76** 4 517 573.99	**20 273 312.92** 14 313 986.07
Excess of Inflow of Funds over Use of Funds	**1 321 111.70** 2 140 036.21	**16 024 804.42** 16 494 698.52	**914 622.56** 3 876 666.60	**18 260 538.68** 22 511 401.33
Total	**35 196 206.35** 29 332 512.72	**22 904 525.24** 23 795 379.52	**9 328 393.95** 9 899 889.93	**67 429 125.54** 63 027 782.17

ESF Contacts Finance and General Administration

J-P Roth *Finance Officer, Controller*
Tel: +33 (0)3 88 76 71 09
Email: finance@esf.org

J Steydli *Personnel and Financial Administrator*
Tel: +33 (0)3 88 76 71 08
Email: finance@esf.org

N Karamanoukian *Financial and Office Services Administrator*
Tel: +33 (0)3 88 76 71 12
Email: nkaramanoukian@esf.org

N Thierry *Financial Administrator*
Tel: +33 (0)3 88 76 71 11
Email: nthierry@esf.org

M Champeau *Financial Assistant*
Tel: +33 (0)3 88 76 71 13
Email: mchampeau@esf.org

S Muckensturm *Financial Assistant*
Tel: +33 (0)3 88 76 71 10
Email: smuckensturm@esf.org

A Moillic *Computer Systems Manager*
Tel: +33 (0)3 88 76 71 33
Email: amoillic@esf.org

M A Comte *Receptionist*
Email: macomte@esf.org

M Blumenroeder *Receptionist*
Email: mblumenroeder@esf.org
Tel: +33 (0)3 88 76 71 00

Graphic Design : Dans les villes • Strasbourg
Printer : IREG
Dépôt légal : mai 1997 - N° d'ordre : 971069

European Science Foundation

1, quai Lezay-Marnésia
67080 Strasbourg Cedex France
Tel: +33 (0)3 88 76 71 00
Fax: +33 (0)3 88 37 05 32
WWW Home Page: http://www.esf.org

ISBN 2-903148-92-9